PUBLIC HEALTH REPORTS

In this issue

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Portion of the Papyrus Ebers

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The Papyrus Ebers

The Papyrus Ebers, dating from the first half of the 16th century B. C., is one of the earliest medical works in existence. Primarily a collection of recipes for treating various diseases and symptoms, it constitutes an important source of information about ancient Egyptian medicine. Many of the recipes are attributed to the period 2500–3000 B. C.

The document begins with invocations of the gods and recitals to be spoken when treating a patient, but it also contains between 700 and 800 prescriptions arranged according to organs and diseases, two short treatises on the heart and vessels, and a brief surgical section. Diseases are rarely described.

The prescriptions, which make up the major portion of the papyrus, include both internal and external remedies. Names and amounts of ingredients to be used are specified, and instructions for preparation are given. Drugs were boiled and strained or pounded in a stone mortar. When given as potions, they were mixed with beer, wine, milk, or water. Sometimes the drugs were formed into candy with honey or baked into cakes. Pills were made with bread dough. For ointments, active ingredients were mixed with fat.

Hundreds of substances are mentioned in the prescriptions. Metallic salts—lead, iron, and possibly antimony, for example—were recommended for treating diseases of the eyes; castor oil, colcynth, and senna were used as purgatives; ox liver was prescribed for night blindness; turpentine was one of many remedies for worms.

The treatises on the heart and vessels indicate that the ancient Egyptian physician may have known that the heart is the center of the vascular system: "The beginning of the physician's secret: knowledge of the heart's movement and knowledge of the heart. There are vessels from it to every limb. As to this, when any physician, any surgeon, or any exorcist applies the hands or his fingers to the head, to the back of the head, to the hands, to the place of the stomach, to the arms or to the feet, then he examines the heart, because all his limbs possess its vessels, that is: the heart speaks out of the vessels of every limb." (Translation by B. Ebbell, 1937.)

Some authorities consider the Papyrus Edwin Smith, a surgical treatise written during the 17th century B. C., the only really scientific work among the several Egyptian papyri, but others regard the Papyrus Ebers as equally valuable for its information in many different fields of medicine. These papyri are a part of the accumulation of medical literature which eventually gave rise to the profession of medical librarianship, as explained in the article, Medical Librarianship, by Dr. Estelle Brodman, p. 473 of this issue.

The Papyrus Ebers was purchased by Professor Georg Ebers in 1873, and a facsimile edition, with introduction and vocabulary, was published in 1875. It was first translated in 1890 by H. Joachim, a German physician.

—Sources: A History of Medicine, by Ralph H. Major, 1954. A History of Medicine, by Henry E. Sigerist, 1951. Medicine Throughout Antiquity, by Benjamin Lee Gordon, 1949.

The figure used in the frontispiece border design is from a casket panel lent to the National Gallery of Art by C. S. Gulbenkian, Esq.

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State Air Pollution Control Activities

By RICHARD L. WOODWARD, Ph.D.

AIR POLLUTION CONTROL in the United States has traditionally been a function of municipal governments. Virtually all of our larger cities have some type of ordinance for controlling air pollution. In the past, most of these laws were directed primarily at controlling coal smoke, but in recent years many of the laws have been broadened to consider other air pollutants as well. Most of the recently adopted air pollution control ordinances contain provisions on gas, vapor, fumes, and dusts from sources other than coal combustion.

With the growth of metropolitan areas and the movement of industries to suburban sites, it has become apparent that a municipality frequently is an unsuitable unit for operating an effective air pollution control program. If city A is carrying on a vigorous program of air pollution control, while neighboring city B does little or nothing, not only does the pollution from B affect A when the wind is in the right direction, but the residents and industries in city A will resist enforcement of their own laws. To overcome this difficulty, government units which control larger areas have been utilized. The first of these was in the Boston metropolitan area. The area, including some 31 cities and towns, has had a smoke control program since 1910 under the supervision of the division of smoke inspection, Massachusetts Department of Public Utilities.

In other areas the county was chosen as a suitable administrative unit. Hudson County, N. J., adopted a smoke control ordinance in 1931. In 1947 California passed an air pollution control ordinance establishing districts in each county. The district boundaries are coextensive with county boundaries and can be activated by the county boards of supervisors. Districts are operating under this act in Los Angeles County and in Santa Clara County. Kentucky adopted a similar law in 1952, and in the same year the Louisville-Jefferson County district was established to supersede the Louisville organization which had been powerless to act against important sources of pollution outside the city limits. Milwaukee County, Wis., and Allegheny County, Pa., also have countywide air pollution laws.

Dr. Woodward is sanitary engineer in charge of the Water Treatment Unit at the Robert A. Taft Sanitary Engineering Center, Public Health Service. During 1953–54 he was with the center's Planning and Evaluation Unit and worked on the development of the air pollution research program. *This paper was presented at the annual meeting of the American Society of Civil Engineers in New York City, October 1954.*

Need for State Action

In a number of instances the county is not an ideal unit for air pollution control work. In the San Francisco Bay area, for example, nine counties are involved. Many other metropolitan areas include parts of more than one county.

Moreover, although air pollution problems

are generally associated with large cities, they are not limited to them. Damage to crops, to other vegetation, and to cattle by fumes from smelters and other industrial installations have been the cause of considerable litigation. Many industrial installations are located in rural areas where there is no effective agency for air pollution control, and virtually the only remedy available to persons affected has been through direct court action.

Many parallels, legal and other, exist between the problems of air pollution and water pollution. Both are basically economic problems and both require a considerable amount of technical knowledge and skill for their solution. Both air and water pollution are to some extent inevitable and determinations must be made of what degree of pollution is to be tolerated and how pollution is to be abated or prevented. Both are continuing problems which require continuous positive action on the part of waste producers if pollution is to be kept within acceptable limits.

Air pollution and water pollution have important differences as well as similarities, and in some respects the air pollution problem is far more complicated. However, it is apparent that direct court action by the damaged parties is not an effective method of attacking either problem. In view of the position of the States under our form of government, the State is the logical unit for adoption of laws, development of programs, and assistance to local governmental units in the actual abatement of pollution.

One of the major fields in which there is need for State action is the provision of specialized technical services. A compilation of the expenditures of local air pollution control agencies made by the Air Pollution Control Association in 1952 showed that only 17 cities had budgets of $25,000 per year or more (*1*). Only nine cities spent more than 15 cents per capita per year, the maximum being 35 cents per capita. In most communities, at least half of the personnel are inspectors. Thus, only the large cities are able, with present appropriations, to support more than the most rudimentary laboratory facilities for sampling and analyzing air to provide the basic information needed to assess problems or to support the technical staff needed to prescribe solutions to other than routine problems. The smallest city spending as much as $25,000 per year in 1952 was Syracuse, N. Y., with a population of 220,000. Even so small a city will probably need considerable outside technical assistance in dealing with certain problems.

Survey of State Activities

The communities naturally look to State agencies for technical assistance and in most States some attempt is made to fill this need. A survey recently completed by the Robert A. Taft Sanitary Engineering Center indicates that in all but seven States some attempt is made to assist local governments in solving air pollution problems. As a rule the State agency most active in this field is the health department. In a few States, such as New York, the labor department is active, and in others State-supported universities provide technical assistance to communities and industries.

In most States, however, these activities are only incidental to other work, and no specific financial support is provided for air pollution consultation, technical assistance, or control activities. In six States an agency has either an effective legislative mandate with respect to air pollution, specific executive authorization, or funds earmarked for this purpose. From this, it is obvious that in a majority of the States the activities of the agency are severely limited by lack of funds.

All of the State laws regarding air pollution other than the ordinary nuisance laws are relatively new and reflect the increasing interest and concern which have been particularly marked since the end of World War II. This same increase in interest is shown by the fact that about 80 percent of the local ordinances in effect in our larger cities have been adopted or revised in this same period.

Three States, Oregon, Massachusetts, and New Jersey, have laws establishing air pollution control agencies in the State government. In Oregon and New Jersey, an air pollution control commission or authority is established within the State health department. In Massa-

chusetts the law places authority and responsibility in the health department without specifying the internal organizational unit for the activity. The division of sanitary engineering will, however, be responsible for air pollution control work under this law. The division of smoke inspection, formerly under the department of public utilities, was transferred to the health department and is continuing its work in the metropolitan Boston area.

Oregon's law, the first of the three, was passed in 1951. The Massachusetts and New Jersey laws were adopted in June and September 1954, respectively. All three of the laws give the State agency power to promulgate rules and regulations aimed at preventing or controlling air pollution and outline procedures for dealing with violations. Although in each case the State health department administers the law, the agency is not limited to considerations of the effects of air pollution on health.

The Massachusetts and New Jersey laws deal with the relationships between the State agency and local governmental air pollution control organizations in some detail. The Oregon law gives the authority to advise, consult, and cooperate with such groups and to encourage activity against air pollution. In Massachusetts, local agencies are authorized to regulate air pollution within their respective areas, with their rules and regulations being subject to approval by the State health department. If air pollution from one community adversely affects another, the State health department is authorized, upon request of the affected community and after a hearing with the parties concerned, to assume joint jurisdiction in dealing with the problem.

The New Jersey law authorizes the State Air Pollution Control Commission to organize county air pollution control commissions with advisory functions and also provides that the law shall not supersede local ordinances and regulations nor preclude the right of local agencies to adopt ordinances and regulations which are not inconsistent with the State law.

The Massachusetts and New Jersey laws have been passed so recently that there has been no experience with their operation. The Oregon Air Pollution Authority currently operates on a biennial budget of $85,000 with a staff of 4 engineers, 1 chemist, and 1 stenographer and is authorized to develop a comprehensive program for air pollution control throughout the State. The staff has engaged in broad studies of the air pollution problems of the State as well as in investigations of specific problems brought to its attention by complaints. Experience to date has indicated a need for extension of the State air sampling activities and for the adoption of local ordinances to cope with air pollution problems within cities.

Maryland and Pennsylvania maintain units within the industrial hygiene bureaus of their health departments with specific responsibility for investigation, consultation, and assistance to local agencies on air pollution problems. The Maryland unit, although only partly staffed, has provided assistance to a number of communities. The Pennsylvania unit is equipped with two mobile laboratories for field studies and has investigated a number of problems throughout the State.

In Washington a different scheme has been adopted. The environmental research laboratory of the University of Washington was established in 1951 and has conducted a number of studies of air pollution problems on a fee basis for both public agencies and private sponsors. The Washington Institute of Technology has conducted research on the effects of air pollution on animal life and vegetation. On March 15, 1954, funds were made available by the Governor, and a statewide air pollution advisory service, which can provide assistance to local governments without requiring direct financial support from them, was established. This service is organized with the director of the Washington Pollution Control Commission as the State official cognizant of all air pollution activities, the environmental research laboratory as technical consultants on community health and welfare aspects of air pollution, the Washington Institute of Technology as technical consultants on the agricultural aspects of air pollution, and the air pollution committee of the Washington State Health Council as a general policymaking group.

In addition to these State activities, a number of States have considered legislation on air pollution, and several have established legislative committees or commissions to consider the need for legislation on the subject during the past 5 years. At least 16 States are known to have had some air pollution legislation or resolution under consideration in recent years.

One interstate air pollution problem has been the subject of State legislation. The New York legislature during its 1954 session passed a bill appropriating $30,000 for use by the Interstate Sanitation Commission in studying the air pollution problem in the New York metropolitan area and developing recommendations for coping with this interstate problem. The act is to take effect when New Jersey makes a similar appropriation. The companion legislation in New Jersey has not been passed. Similar legislation was passed in 1952 by New York but not by New Jersey.

Summary

Since the end of World War II there has been a marked increase in interest in air pollution and in activities aimed at its control. Although the problem has been traditionally considered one for local action, in many places the need for State assistance to local governments has become apparent. State assistance is also needed to deal with problems when local control agencies are nonexistent or powerless to act because of lack of jurisdiction.

Three States, Oregon, Massachusetts, and New Jersey, have recently established air pollution control agencies in their State health departments with power to control air pollution. Three other States, Maryland, Pennsylvania, and Washington, have provided funds specifically for investigations of air pollution problems and assistance to local agencies.

In most of the other States, some agency, generally the health department, provides assistance to local agencies incidental to other operations, but such assistance is severely limited by the lack of any specific financial support for the work. In a number of these States, legislation dealing with air pollution has been considered recently. There is a trend toward increasing activity by State agencies in the air pollution field.

REFERENCE

(*1*) Air Pollution Control Association: Statistical tabulation of air pollution control bureaus, United States and Canada. Pittsburgh, Pa., The Association, 1952.

Mental Health Panel Discussion Kit

Portions of the film, Preface to Life, have been selected for a mental health panel discussion kit, for use on television or at meetings. The kit includes 135 feet of 16 mm. sound film, on a 400-foot reel in a 400-foot can, and 6 copies of an outline of topics, for use as a guide in presenting a half-hour panel discussion.

Single copies of the outline are available at no charge from the National Institute of Mental Health, Public Health Service, Bethesda 14, Md.

Ownership and Size of Nursing Homes

By JERRY SOLON, M.A., and ANNA MAE BANEY, B.A.

THE HISTORY of nursing homes in this country has led to a particular pattern in their ownership and size. Most nursing homes are proprietary. Linked to this type of ownership is the typically small bed capacity of these establishments. It is our purpose here to see just what is the size of existing nursing homes, how many of these homes are operated commercially, or how many are under voluntary and public auspices, and how these two features of ownership and size are interrelated.

We will be primarily concerned with the 7,000 establishments described in the parent report of this study as "skilled nursing homes" (*1*). The national inventory of nursing homes and related facilities on which this study is based set these skilled nursing homes in perspective within a broad family of facilities. Along with skilled nursing homes, the inventory included "personal care homes," some offering skilled nursing and some not, as well as "sheltered homes." As in the earlier report, these related types of facilities will be drawn in for comparative data.

Mr. Solon and Miss Baney, health program analysts in the Division of Hospital Facilities, Public Helath Service, present their second report on the national inventory of nursing homes and related facilities. The first report, which appeared in the December 1954 issue of Public Health Reports, p. 1121, introduced overall national estimates and an analysis of the distribution of facilities among States and Territories.

So rapidly has the nursing home developed during the past 20 years that its history seems more like an eruption than an evolutionary development. Its rapid growth was influenced by the convergence of a number of social and economic circumstances. The principal ones can only be mentioned here in passing. They include the extension of the life span and marked increase of the aged population, changes in family structure and in living arrangements which have tended toward shelving of the older people, and the growing prominence of the chronic diseases, among both young and old. Although the social and biological factors are the basic elements which combined to create a need, their effect was precipitated by additional important elements. Perhaps the most important among these was the disrepute into which the public almshouse had fallen and the emergence of a new philosophy in public welfare in the Social Security Act of 1935. When society turned from almshouses and chose to place cash assistance in the hands of the needy aged, the resulting expanded demand for private living quarters for older people, many of them infirm or ailing, stimulated a significant response.

The easiest and quickest response came from sources requiring the least immediate outlay in capital and organization. Expediency led to widespread use of existing family structures, not otherwise fully occupied, with the homeowner or lessee often having an applicable skill such as nursing and an interest in such an ac-

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tivity as a source of income. Here then was an opportunity for small proprietary ventures.

Some actually started as nursing homes. Some started as boarding homes for elderly people. But in historical background, even as in contemporary operation, the line between homes which offered nursing care and those which provided domiciliary services was not sharply drawn. With the passage of time, homes which had begun as room-and-board enterprises gradually, sometimes imperceptibly, assumed responsibility for meeting personal care and nursing needs as these arose among their aging residents. Thus, many of today's nursing homes are yesterday's small private boarding homes for older people. The current nursing home situation with respect to ownership and size reveals the imprint of these origins.

Ownership of Skilled Nursing Homes

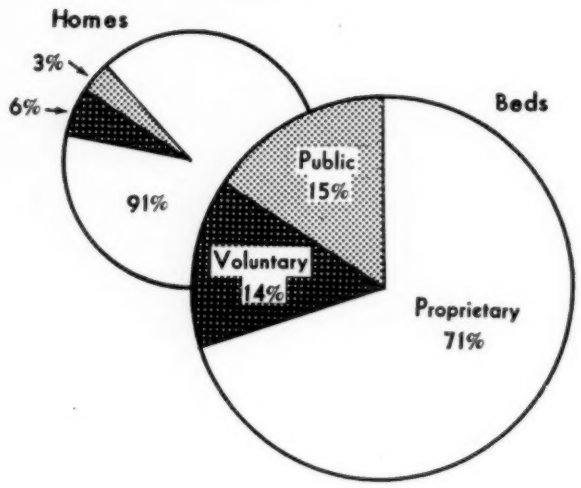
Nursing home is often understood in common parlance to mean private nursing home. This association almost justifies itself, for fully 91 percent of all skilled nursing homes are operated under private commercial ownership.

As though to reinforce this popular identification, the nonprofit voluntary and public institutions have historically been known by other names. Although a nursing home by any name is no less a nursing home, it is often not thought of as such when it bears the label "home for the aged" or "chronic disease hospital" or "county home."

In the present study, institutions are classified by their function regardless of type of name. The resulting facts about skilled nursing homes show that 6 percent are under voluntary (private nonprofit) auspices, of which one-third are church related. Public (State and local governmental) auspices account for 3 percent of the homes.

The picture is somewhat deceptive with these figures alone. The number of beds provided in each category of ownership has an additional significance. Because the voluntary and public homes are typically larger than the proprietary homes, they account for more beds than their small number would suggest (fig. 1). Although

Figure 1. Distribution of skilled nursing homes and beds by type of ownership, 1954.



representing together only 1 home in every 10, they provide 3 beds out of every 10. Thus, the predominance of proprietary ownership, 91 percent in terms of number of homes, is abbreviated to 71 percent in terms of number of beds.

The preponderance of proprietary skilled nursing homes is observed over and over again in the individual States (table 1). It is true that in a number of States there are relatively few proprietary skilled nursing homes or even none at all. However, these are generally States with few establishments all told. It should be mentioned here, however, that since detailed field surveys were not requested of the States for the purpose of the present inventory, the data reported for some individual States may not be wholly reliable.

Ownership of Related Facilities

Proprietary ownership is relatively less prominent in personal care homes and sheltered homes. In those categories, the voluntary and public auspices are traditionally more active than they are in skilled nursing homes (table 2).

Care Homes With Skilled Nursing

Among the several types of facilities related to skilled nursing homes, it is only in personal care homes with skilled nursing that voluntary sponsorship exceeds the proprietary in number of beds provided. Both secular and church groups have developed their programs quite

Table 1. Distribution of skilled nursing homes and beds, by type of ownership, by State and Territory, 1954

State	Number of homes				Beds			
	Total	Type of ownership			Total number	Percent distribution by type of ownership		
		Proprietary	Voluntary	Public		Proprietary	Voluntary	Public
Total, 51 States and Territories reported [1]	[2] 6, 539	5, 953	387	198	[3] 171, 816	70. 7	13. 8	15. 5
Alabama	67	59	[4] 8	—	1, 446	—	—	—
Arizona	7	7	0	0	132	100. 0	0	0
Arkansas	61	54	5	2	1, 281	71. 3	8. 6	20. 1
California	573	530	23	20	12, 806	74. 3	7. 6	18. 2
Colorado	52	47	4	1	1, 775	89. 5	5. 5	5. 1
Connecticut	193	186	6	1	4, 868	91. 8	6. 8	1. 4
Delaware	1	0	1	0	44	0	100. 0	0
District of Columbia	7	4	3	0	311	15. 8	84. 2	0
Florida	43	42	1	0	[3] 475	—	—	—
Georgia	56	47	8	1	1, 822	63. 9	35. 0	1. 1
Idaho	1	0	1	0	36	0	100. 0	0
Illinois	527	481	14	32	[3] 16, 753	61. 0	8. 3	30. 8
Indiana	175	175	0	0	3, 035	100. 0	0	0
Iowa	278	247	30	1	6, 303	69. 8	29 9	3
Kansas	5	[4] 4	[4] 1	—	118	—	—	—
Louisiana	53	47	6	0	1, 631	79. 7	20. 3	0
Maine	189	187	2	0	2, 491	89. 0	11. 0	0
Maryland	112	103	8	1	3, 604	79. 0	7. 9	13. 0
Massachusetts	484	468	14	2	10, 854	91. 7	6. 6	1. 7
Michigan	458	394	29	35	14, 256	51. 1	13. 8	35. 1
Minnesota	178	152	17	9	4, 242	65. 5	26. 8	7. 7
Mississippi	2	0	0	2	[3] 24	0	0	100. 0
Missouri	95	77	18	0	3, 832	55. 7	44. 3	0
Montana	8	7	0	1	289	83. 7	0	16. 3
Nebraska	3	0	3	0	440	0	100. 0	0
Nevada	10	2	0	8	239	23. 0	0	77. 0
New Hampshire	75	69	3	3	1, 681	72. 0	5. 6	22. 4
New Jersey	147	118	17	12	5, 220	56. 8	14. 3	28. 9
New Mexico	36	34	0	2	547	63. 3	0	36. 7
New York	767	739	17	11	20, 717	80. 4	3. 8	15. 9
North Carolina	4	2	2	0	59	62. 7	37. 3	0
North Dakota	7	5	2	0	143	63 6	36. 4	0
Ohio [5]	471	418	53	0	12, 838	66. 9	33. 1	0
Oklahoma	109	102	6	1	1, 927	86. 8	11. 1	2. 1
Oregon [2]	171	159	6	5	3, 914	81. 3	4. 3	13. 7
Pennsylvania	146	115	0	31	7, 448	36. 2	0	63. 8
Rhode Island	40	39	1	0	642	98. 1	1. 9	0
South Carolina	29	26	2	1	618	71. 8	21. 0	7. 1
South Dakota	2	2	0	0	18	100. 0	0	0
Tennessee	29	26	3	0	700	80. 3	19. 7	0
Texas [5]	120	114	6	0	2, 683	90. 1	9. 9	0
Utah	3	1	2	0	73	13. 7	86. 3	0
Vermont	82	78	4	0	841	90. 0	10. 0	0
Virginia	144	134	7	3	3, 129	72. 8	9. 4	17. 8
Washington	298	264	26	8	8, 964	77. 0	19 1	3. 9
West Virginia	51	43	6	2	1, 697	66. 4	8. 7	24. 9
Wisconsin	152	133	18	1	4, 267	61. 6	37. 5	. 9
Wyoming	13	11	1	1	151	68. 2	18. 5	13. 2
Alaska	0	0	0	0	0	0	0	0
Hawaii	3	1	1	1	366	. 5	11. 7	87. 7
Puerto Rico	2	0	2	0	66	0	100. 0	0

[1] Virgin Islands did not report. Kentucky's total of 149 homes with 2,604 beds could not be classified by type of facility, for lack of information on level of service. [2] Includes one home (22 beds) of unknown ownership. [3] Incomplete figure. Number of beds not reported for some homes (21 homes in Florida, 28 homes in Illinois, 1 home in Mississippi, and proportionately negligible numbers in 5 other States). [4] Probably incomplete. [5] May be under-reported since a considerable number of homes were not identified as to type of facility.

NOTE: A dash (—) represents "not known."

substantially in this area. We recognize these homes most commonly as homes for the aged which furnish some amount of skilled nursing care along with their primarily domiciliary services.

The introduction and expansion of nursing services in these personal care institutions is essentially similar to the experience, mentioned at the outset, of many early proprietary boarding homes. Many homes for the aged, as their residents presented increasing infirmities and developed chronic illnesses, have gradually drifted from essentially room-and-board services into the provision of skilled nursing care as well. This may be only the beginning of this trend, as it would seem that time will inevitably bring a deeper involvement in the provision of skilled nursing care on the part of homes for the aged.

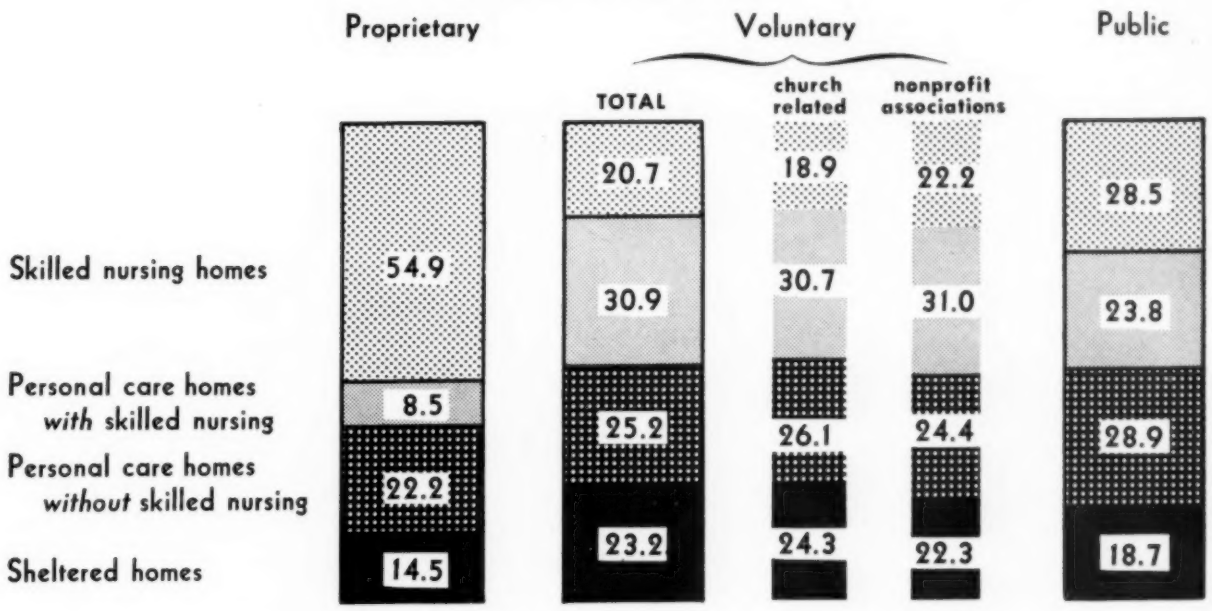
Today, one-fourth of all personal care homes

Table 2. Distribution of nursing homes and related facilities, by type of ownership, 1954 [1]

Type of facility	Total	Type of ownership				
		Proprietary	Voluntary			Public
			Total	Church related	Nonprofit associations	
	Number of homes					
Total	25,000	20,700	2,600	1,050	1,550	1,700
Skilled nursing homes	7,000	6,400	400	150	250	200
Personal care homes with skilled nursing	2,000	1,300	500	200	300	200
Personal care homes without skilled nursing	7,000	5,600	900	300	600	500
Sheltered homes	9,000	7,400	800	400	400	800
	Number of beds					
Total	450,000	232,000	120,100	51,300	68,800	97,800
Skilled nursing homes	180,000	127,300	24,800	9,600	15,200	27,900
Personal care homes with skilled nursing	80,000	19,600	37,100	15,700	21,400	23,300
Personal care homes without skilled nursing	110,000	51,400	30,300	13,500	16,800	28,300
Sheltered homes	80,000	33,700	27,900	12,500	15,400	18,300
	Percent distribution of homes					
Total	100.0	83.2	10.8	4.1	6.7	6.0
Skilled nursing homes	100.0	91.0	5.9	2.1	3.8	3.0
Personal care homes with skilled nursing	100.0	65.0	25.3	11.0	14.3	9.6
Personal care homes without skilled nursing	100.0	80.5	12.8	4.3	8.5	6.7
Sheltered homes	100.0	81.7	9.4	4.7	4.6	8.8
	Percent distribution of beds					
Total	100.0	53.9	25.5	10.8	14.7	20.6
Skilled nursing homes	100.0	70.7	13.8	5.4	8.5	15.5
Personal care homes with skilled nursing	100.0	24.5	46.4	19.7	26.7	29.1
Personal care homes without skilled nursing	100.0	46.7	27.5	12.2	15.3	25.7
Sheltered homes	100.0	42.1	34.8	15.6	19.2	22.9

[1] Total national estimates for 53 States (including Territories). Number of homes and beds is given in rounded figures; percentages are based on unrounded figures.

Figure 2. Relative participation in different types of facilities, by each type of ownership: percent distribution of beds, 1954.



which provide skilled nursing services are operated by voluntary groups. However, these homes account for nearly one-half of all beds. The effect of large homes on the distribution pattern is reflected even more sharply with public homes. Although publicly operated institutions represent only one-tenth of all homes in this category, they have three-tenths of the beds.

Even though proprietary interests do not predominate here as much as they do in skilled nursing homes, they are prominent nevertheless. One-fourth of all the beds in personal care homes providing skilled nursing are found in proprietary establishments. Without dominating in number of beds, commercial ownership accounts for two-thirds of all homes in this category.

In many areas, proprietary homes which offer mainly personal care with some skilled nursing are not ordinarily distinguished from homes whose primary and predominant function is skilled nursing care. All are loosely regarded as nursing homes. This designation is sometimes even extended to homes which furnish only personal care with no skilled nursing at all. Much of the troublesome confusion over concepts and the application of standards in this field may be traced to failure to recognize legitimate differences in the character and level of care offered by different homes.

Domiciliary Facilities

Sheltered homes and personal care homes which do not provide skilled nursing are numerically dominated by proprietary auspices, but not as overwhelmingly as are the skilled nursing homes. Voluntary organizations share in these facilities proportionately more than they do in skilled nursing homes, although not as heavily as was noted for the personal care homes which offer skilled nursing.

The relative part played by public ownership in these nonnursing categories is only slightly less than in personal care homes which provide skilled nursing. Among both sheltered homes and personal care homes lacking skilled nursing, governmental operation accounts for somewhat under 10 percent of the homes and about one-fourth of the beds.

Patterns Under Different Auspices

We have seen from figure 1 and the related discussion how the different auspices share proportionately in providing the homes of each type. We may also observe how each type of sponsorship distributes its total effort among

Table 3. Relative participation in different types of facilities, by each type of ownership: percent distribution of homes, 1954

Type of facility	Proprietary	Voluntary			Public
		Total	Church related	Nonprofit associations	
Total	100.0	100.0	100.0	100.0	100.0
Skilled nursing homes	30.8	15.5	13.5	17.0	12.6
Personal care homes with skilled nursing	6.3	19.0	20.2	18.3	11.5
Personal care homes without skilled nursing	27.3	33.7	27.6	38.1	28.2
Sheltered homes	35.6	31.8	38.8	26.5	47.6

NOTE: Figure 2 gives the corresponding distribution of beds in these homes. The basic figures for table 3 and figure 2 will be found in table 2. Percentages are based on unrounded figures.

the several categories. Figure 2 and table 3 provide this perspective.

In terms of beds, the comparative bars in figure 2 point up the outstanding differences in the way the various auspices distribute their resources among the several classes of facilities. The voluntary and public sponsorships show a quite even pattern of participation in all four types. In marked contrast, proprietary interests show a heavy concentration in skilled nursing homes.

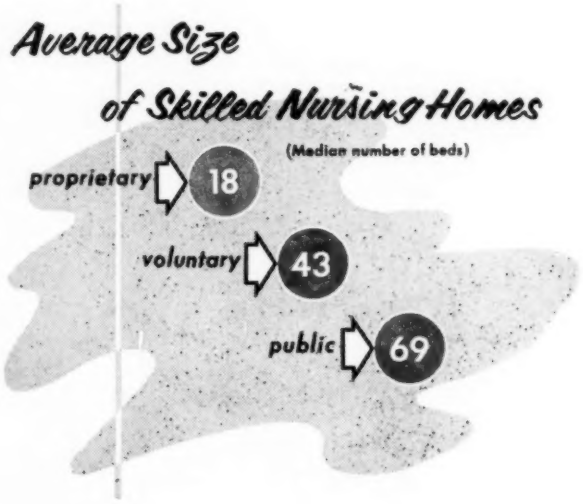
Similarities are highlighted no less than the contrasts. Within the voluntary field, the almost identical emphases of the nonprofit associations and the church-related sponsors are strikingly revealed in the charted distribution of beds.

Size of Skilled Nursing Homes

The size of home, in number of beds, appears as a factor more than once in the foregoing. It is especially evident when we compare the proportion of beds with the proportion of homes under each of the various auspices. A direct look at size in relation to ownership would now be in order.

The typical skilled nursing home consists of 19 beds. (Median size is used in this study so that the occasional huge institution will not unduly weight the average.) Bracketed into this average of 19 beds are very sharp variations among the different forms of ownership. The accompanying illustration tells this story. In the number of beds, the proprietary homes are typically small, the philanthropic homes average a medium size, and the public homes are characteristically large.

Within the voluntary field, there is a close similarity in size between the church related and the other nonprofit homes. The average home under church auspices has a capacity of 48 beds, and the other voluntary institutions average 40 beds.



Along with these various representative sizes there is a broad range of size among individual homes under each type of sponsorship. As table 4 shows, every size of home is to be found under every form of ownership. Despite the large average size of the nonproprietary homes, as many as one-fourth of all the homes under voluntary and public con-

trol are found to be under 25 beds in size. Some proprietary homes, on the other hand, exceed 100 beds; the largest is reported as having 300 beds.

However, although different sizes are found among the homes of every sponsorship, it is equally evident from table 4 that the overall pattern of distribution according to size varies markedly with type of ownership. The pattern shifts from a concentration in the smaller sizes among the proprietary homes to an almost identical pattern in reverse among the public homes. In terms of number of beds, the relative concentration of the public and voluntary homes in large units produces a striking observation—that two-thirds of all the beds under these auspices are in institutions of 100 beds or more.

The way in which many of today's proprietary nursing homes developed, mentioned earlier, explains the existence of homes which accommodate only 1 patient, 2 patients, or other small numbers. Many States do not license homes of such small capacity. The existence of these very small homes, however, raises a question as to their significance in the total picture. The present study reveals that homes of less than 5 beds constitute hardly more than 1 percent of all beds in skilled nursing homes.

The small average size of proprietary skilled nursing homes is repeatedly emphasized in the data for individual States. The largest median size for any State is 30 beds (Montana). The smallest average is 8 beds (Vermont). In as many as 11 States, the average home consists of fewer than 15 beds. In only 3 States is the average 25 beds or more.

Size of Related Facilities

The pattern whereby the different types of auspices tend toward respectively smaller or larger facilities is not peculiar to the skilled nursing homes. The pattern is repeated for each type of facility covered in this inventory. Uniformly, the proprietary homes are on the average the smallest and the public homes are the largest, as the following median bed capacities demonstrate:

	Proprietary	*Voluntary*	*Public*
Personal care homes with skilled nursing	14	61	80
Personal care homes without skilled nursing	9	25	38
Sheltered homes	7	27	37

Summary

Size and ownership of nursing homes are intimately related, according to this second report on the Public Health Service national inventory of nursing homes and related facilities. Proprietary homes are typically quite small, voluntary homes are considerably larger, and public homes are usually the largest. Among skilled nursing homes, which engage primary interest in this study, the median sizes under the three classes of ownership were found to be, respectively, 18 beds, 43 beds, and 69 beds.

Table 4. Distribution of skilled nursing homes by size of home, by type of ownership, 1954

Size of home (number of beds)	Percent distribution by size of home					
	Homes			Beds in homes of specified size		
	Proprietary	Voluntary	Public	Proprietary	Voluntary	Public
Total	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0
Under 10 beds	22. 6	2. 3	2. 0	6. 6	0. 3	0. 1
10–14	18. 3	8. 3	3. 0	10. 7	1. 6	. 3
15–24	29. 5	18. 9	7. 6	27. 7	6. 0	1. 1
25–34	15. 7	11. 6	8. 1	22. 0	5. 6	1. 8
35–49	8. 3	15. 8	13. 6	16. 3	10. 6	4. 4
50–74	3. 3	16. 0	20. 2	9. 3	15. 6	9. 3
75–99	. 7	8. 3	12 1	3. 0	11. 4	7. 8
100 and over	. 6	17. 8	32. 3	4. 3	49. 0	75. 3

With 91 percent of all skilled nursing homes under proprietary operation, the popular conception of the nursing home as a small private establishment is objectively accurate. This conception, however, should not cloud the significant, though smaller, role of voluntary and public auspices in this type of facility. Although these nonprofit interests represent only 1 home in 10, they provide, as a result of their usually larger size, 3 beds of every 10.

REFERENCE

(*1*) Solon, J., and Baney, A. M.: Inventory of nursing homes and related facilities. Pub. Health Rep. 69: 1121–1132, December 1954.

Definition of Sanitary Engineer Revised

A revision of the 1943 definition of the term, "sanitary engineer," was approved by the Committee on Sanitary Engineering and Environment of the National Research Council, December 14, 1954. The new definition follows.

The professional occupational title "sanitary engineer" shall apply to a graduate of a full 4-year, or longer, course leading to a bachelor's, or higher, degree, with the qualifications noted below, at an educational institution of recognized standing, as defined below, with major study in engineering, who has fitted himself by suitable specialized training, study, and experience (*a*) to conceive, design, appraise, direct, and manage engineering works and projects developed, as a whole or in part, for the protection and promotion of the public health, particularly as it relates to the improvement of man's environment, and (*b*) to investigate and correct engineering works and other projects that are capable of injury to the public health by being or becoming faulty in conception, design, direction, or management.

Persons lacking in formal education who otherwise meet the terms of the above definition may be considered as having the equivalent of a full 4-year course in engineering in an educational institution of recognized standing provided they are registered engineers and have sufficient experience or training of the type defined above to substitute for the engineering education lacking. The basis of such substitution shall be 2 years of appropriate training or experience for 1 year of formal engineering education.

An educational institution of recognized standing is defined as one which is accredited by a national or regional accrediting association, such as the Association of American Universities, or the New England, Middle States, North Central, Southern, or Northwest Association of Secondary and Higher Schools, or one whose professional curriculum has been accredited by the Engineers' Council for Professional Development of the Committee on Professional Education, American Public Health Association.

The practice of sanitary engineering includes the following activities:

1. Surveys, reports, designs, reviews, direction, management, operation, and investigation of works or programs for:

(*a*) Water supply, treatment, and distribution.

(*b*) The collection, treatment, and disposal of community wastes, viz., sanitary sewage, industrial wastes, and refuse, including salvage and reclamation of useful components of such wastes.

(*c*) The control of pollution of surface waterways and ground waters, and of surface and subsurface soils.

(*d*) Milk and food sanitation.

(*e*) Housing and institutional sanitation.

(*f*) Insect and vermin control or eradication.

(*g*) Rural, camp, and recreation place sanitation.

(*h*) The control of atmospheric pollution and air quality, and of light, noise, vibration, and toxic materials, including application to work spaces in industrial establishments (including hygiene engineering).

(*i*) The prevention of radiation exposure.

(*j*) Other fields that have as their major objective the control of environmental factors affecting health.

2. Professional research and development work supporting the activities listed in 1.

3. Responsible teaching of sanitary engineering subjects in educational institutions of recognized standing.

Rocky Mountain Spotted Fever Incidence

Until 1931 more than 99 percent of all cases of Rocky Mountain spotted fever reported in the United States occurred in the Mountain and Pacific States where the disease had been known as early as 1873. Prior to 1931 only a few scattered cases had been reported in the North Central States. An investigation of endemic typhus fever in eastern United States, begun in 1930, established the existence of Rocky Mountain spotted fever in the southeastern part of the country. Cases were reported for the first time in the South Atlantic and East South Central States in 1931.

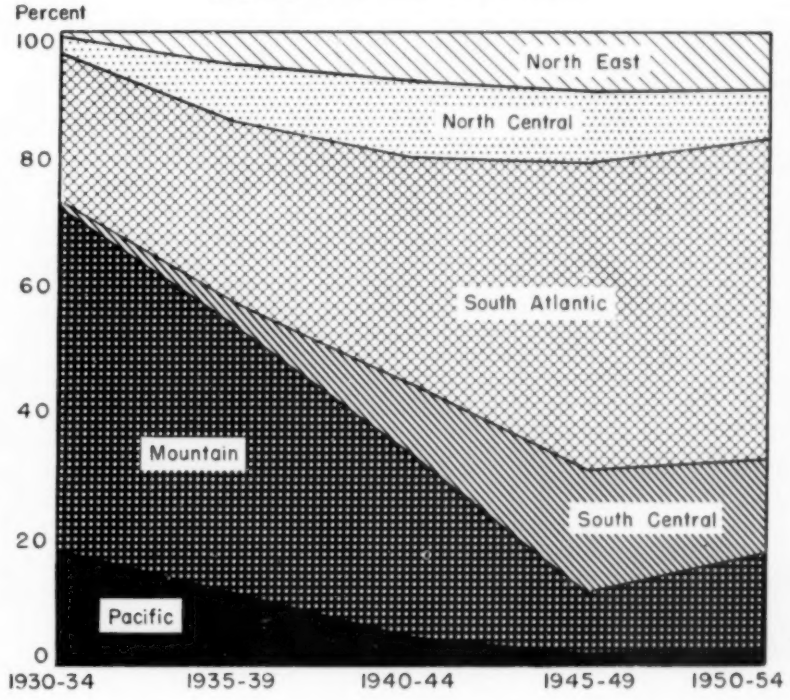
The proportion of reported cases by geographic areas in each 5-year period, beginning with 1930–34 and ending with 1950–54, is shown in the accompanying chart. During this 25-year period, there was a marked reduction in percentage of cases occurring in the Mountain and Pacific States and an increasing proportion in other parts of the country, particularly in the South Atlantic States.

Attack rates per 100,000 population for the various areas by 5-year periods indicate that the peak in incidence of reported cases was reached in the Mountain and Pacific States in the 1930–34 period. Since then, the rate has declined about 80 percent. To what extent vaccination, commenced in 1925 on an experimental basis, has been effective in reducing incidence in these areas is not known.

Since 1930 the disease has been reported in all but two States, Maine and Vermont. Only a few scattered cases have been reported in the remaining New England States. In the western part of the country, incidence rates, based on reported cases, have been highest in Wyoming, Montana, Idaho, and Oregon, in the order named. In eastern United States, Maryland, Virginia, and North Carolina have experienced the highest rates. However, rates in these States have been lower than in the western States noted above.

Prior to the advent of antibiotic treatment of Rocky Mountain spotted fever, the fatality rate for the country as a whole averaged about 18 percent. With extensive use of these therapeutic agents, which began in about 1949, the fatality rate dropped to about 6 or 7 percent.

Proportion of cases of Rocky Mountain spotted fever reported by geographic areas, 1930–54.



Prepared by the National Office of Vital Statistics, Public Health Service.

The Yale Study in Public Health Administration

More people enter public health because of chance and as a result of personal contacts with public health workers than for any other reasons. Other important motivating factors are work content and working conditions. Education and training are relatively less important. Formal vocational counseling plays a negligible role in recruitment for public health.

Most public health workers do not enter public health at the beginning of their careers; about one-third have had 10 or more years' experience in other fields before coming to public health. Such experience commonly has been in hospitals and related institutions or in business and industry. Physicians and nurses tend to have had hospital experience, whereas other personnel have worked in business or industry.

There is relatively little movement of public health workers from agency to agency, or even from job to job within the same agency.

The majority of public health workers are college graduates. More than one-quarter have graduate degrees; about one-third of these degrees are in public health. In collegiate and graduate education, emphasis has been on the natural sciences. Ten percent of the workers have had no formal education beyond high school.

The public health worker spends one-third of his time in direct service activities, one-third in administration and community relations and organization, and the remaining one-third of the time in routine, stereotyped activities.

Most public health workers are happy to be in public health. However, one-seventh of the workers are unhappy about public health work in general. The greatest single source of satisfaction for public health workers is not in their jobs but in their associates. Major sources of dissatisfaction are inadequate salaries, excessive clerical work, inadequate work facilities, lack of recognition and appreciation in the agency, lack of opportunity for advancement, lack of responsibility and freedom of action, and the absence of a "sense of belonging" in the agency.

These and many related findings were obtained in a study of public health administration, known as the Yale Public Health Personnel Research Project. The study was initiated in 1950 by a research team of the Department of Public Health at Yale University and was supported by research grants from the National Institutes of Health, Public Health Service, and the National Tuberculosis Association.

Perhaps as important as the findings of the study were the exploration and development of methods by which such studies could be conducted. The project showed some of the things that could be done in administrative research of this nature and, also, some of the things that could not be done. It differed from past research in that its focus was the public health worker rather than the public health program. Its purpose was to study the backgrounds of public health workers, their activities, and their reactions to their jobs.

The study was motivated by the conviction that the information sought was essential to successful recruitment and efficient utilization of public health personnel. Both are of crucial importance in the face of existing shortages of qualified public health personnel.

The methods employed and some of the findings of this research are being published in a series of papers in *Public Health Reports.*

a method for studying

The Public Health Worker and His Job

By EDWARD M. COHART, M.D., WILLIAM R. WILLARD, M.D., and WILLIAM McC. HISCOCK, M.A.

THE YALE Public Health Personnel Research Project undertook to provide comprehensive knowledge of the professional public health worker and his job. Information on what the public health worker does was the major objective, but information on his training and experience, his working relationships with persons inside and outside his agency, and his personal feelings about his job was also sought. Such information, it was believed, would be useful in obtaining more efficient utilization of personnel and perhaps in recruiting and training workers, in program planning, and in personnel administration.

Job analysis, of course, is not new. The literature contains countless reports of studies of this type in industry and government. But these studies usually have been restricted to stereotyped jobs with routine work patterns. Moreover, the literature failed to reveal any comprehensive approach to the problems of job analysis and utilization of personnel in the public health field. The work that had been done had one or more of the following orientations: concern with a specific geographic area, interest in one discipline, study of one or a few agencies, or a focus on either time or salary. Development of a method of study, therefore, was a necessary part of the Yale project.

The initial focus of the project was the health officer. As it became evident that no one job could be studied properly without regard to interrelationships between jobs, however, the scope was enlarged to include other categories of public health personnel. Furthermore, the sphere of interest in each category was broadened as the possibilities for gaining useful information became apparent. The study was concerned primarily with personnel in official agencies, but a small number of voluntary agency personnel participated also.

Originally, it was thought that it would be possible to obtain composite job descriptions at relatively small cost from an analysis of existing job descriptions. The files of public health job descriptions in the States, maintained by the Bureau of State Services of the Public Health Service in connection with grant-in-aid merit system requirements, were studied. This procedure proved unsuccessful because job descriptions rarely describe the actual job.

Therefore, a plan was substituted to study firsthand the job activities of the several categories of workers in selected State and local health departments. It was decided to conduct this investigation by interviews, occasional

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observations, and time studies. The time-study methodology is discussed in a separate article.

The Code

In order to standardize the interview and to process the information obtained, it was necessary to construct a system of classification. Trial questionnaires were used as a point of departure. On the basis of the information gathered by their use, separate codes were developed for the major service groups in public health. These codes emphasized the differences among the services, which seem to be so important in traditional public health thinking.

After more than a year's experience with these codes, it became evident that it would be impossible to analyze the data except in a very restricted service context. It was necessary, therefore, to identify the characteristics which the codes had in common, with the objective of converting the different schemes of classification into one system which would be applicable to all public health personnel.

A single code, called the universal code, was constructed. A document of approximately 100 pages, this code provides for the classification of thousands of items relating to the activities and experiences of public health workers on the job and to their prior education and training. It makes comparisons possible among the several categories of public health workers.

Provisions were made for coding and classifying in detail the following categories of data: (*a*) identifying information, (*b*) education and training, (*c*) experience, (*d*) ambitions, objectives, and feelings about the job, (*e*) technical or direct service activities, (*f*) ancillary or supporting activities, (*g*) travel, telephone, and correspondence, (*h*) activities in administration, including supervision and management, (*i*) working relationships within the agency and with other agencies, and (*j*) activities related to public education and community organization.

The Interview

The basic pattern for interviewing was nondirective. However, while the interviewee was always encouraged to talk freely, a judicious question or a brief comment by the interviewer assured inclusion of the desired areas of coverage. Interviewers were required to master the code before undertaking field interviews in order that they might conduct the interview without constant reference to lists of questions. The code was available at the interview, and it was used frequently to demonstrate to the interviewee the type of information desired.

To some extent the technique of the interview was determined by the person being interviewed. Some individuals talk freely and easily; others have to be prompted or directed. The interview tended to be more directive with workers engaged in semiroutine jobs than with those in nonroutine jobs. Even at such interviews, however, questions were open-end in nature and were presented so as not to indicate that a particular answer was being sought.

When a new member joined the research staff of the project, he underwent a supervised training period. This included familiarization with the code and the data to be obtained in interviewing, and review and testing of actual

Project Personnel

Co-directors. Dr. Edward M. Cohart and Dr. William R. Willard.

Research Assistants. Irene G. Hiscock, William McC. Hiscock, Erleen F. Jamison, Frances Kord, Virginia R. Marr, Edward Palmer, Vaughn Smith, Laurence R. Wyatt, and Muriel Wyatt.

General Advisory Committee. Dr. Stephen Bailey, Dr. Alfred Burgdorf, Ruth Fisher, Dr. Roscoe P. Kandle, Dr. Edmund K. Kline, John MacDougall, Donald Simpson, Clarence I. Sterling, Dr. V. A. Van Volkenburgh, and James Watson. Consultants: Dr. Ira V. Hiscock, Dr. Carl E. Buck, Charles B. Frasher, and Dr. C. Winfield Scott.

Technical Advisory Committees. Nursing: Ruth Fisher, chairman. Sanitation: Earl J. Anderson, Dr. Leon A. Bradley, Harold D. Rose, John F. Smith, Clarence I. Sterling. Health Education: Dr. Mayhew Derryberry, Ralph T. Fischer, S. S. Lifson, Mary H. Parks, Rae K. Shoemaker, Edward Sierks. Laboratories: Dr. Earle K. Borman, Dr. A. L. Harris, Dr. Edmund K. Kline, Dr. Friend Lee Mickle, Dr. C. A. Perry, Dr. E. J. Tiffany. Statistics: Carl L. Erhardt, William Haenszel, Elizabeth Parkhurst, Louis Weiner.

interview techniques. For the first few weeks, the new member's interview experiences were reviewed by other staff members.

Particularly valuable to the maintenance of uniformity was the assignment of two or more interviewers to the same agency. This procedure made it possible for the interviewers to hold frequent discussions about the problems encountered in interviews, the interpretation and coding of the data, and the use of interview techniques. These team discussions helped to minimize interviewer biases and idiosyncracies. They also resulted in additional suggestions for the analysis of project data.

The conduct of the interview was such that the participants were made to feel that this was "their study," and they were assured that all personal and specific information was confidential and would not reach the ears of their fellow workers or administrative superiors. It was stressed that the study was not an evaluation, but an inventory. These circumstances, we feel, contributed to greater frankness and veracity in the responses. Furthermore, the interview, by its very nature, permitted of explanation and definition which clarified both questions and responses and enhanced the validity of the resulting data.

About 9 or 10 hours were required for each person interviewed. An average of 3 hours was spent in conducting the interview; approximately 3 hours, in recording and coding the interview information; and the remaining time, in preinterview discussions and conferences, in participation in public relations, in travel, and in project housekeeping functions.

Considerably more than 10 hours per person were required, however, for personnel in voluntary health agencies. The difficulties of making contacts and obtaining clearance for the

Table 1. Project coverage of public health personnel in official agencies and visiting nurse associations

State or type of agency	Total number personnel in agencies	Number included in study			Number omitted from study		
		Interview	Other means [1]	Total	Change in method	Exclusions [2]	Total
Trial sample:							
Colorado	986	86		86	191	709	900
Florida	813	219		219	399	195	594
Total	1,799	305		305	590	904	1,494
Study sample:							
Connecticut	853	285	235	520		333	333
Maryland	484	186	105	291		193	193
Michigan	848	229	137	366		482	482
New York (one county)	269	52	74	126		143	143
Total	2,454	752	551	1,303		1,151	1,151
Grand total	4,253	1,057	551	1,608	590	2,055	2,645
Study sample:							
State health departments		378	207	585			
Local health departments		326	261	587			
Visiting nurse associations		48	83	131			
Total		752	551	1,303			

[1] Includes reconstruction from knowledge of agency activities and short interviews, and duplication of data from other persons with like backgrounds, duties, responsibilities, and activities.

[2] Reasons for exclusion: Hospital service, 725; stereotyped or ancillary activities, 721; rare functions (biological production, research), 236; vacant positions, 173; less than one-half time, 93; strictly clinical, 52; trainee positions, 50; new incumbent, 5.

conduct of the study in each voluntary agency, the fact that these agencies were scattered throughout the State, and the small number of workers in any one organization, all contributed to this situation. The research staff found that introductions to State offices from national offices, and to local from State, were not particularly helpful. In each agency, much time was needed to explain the project to the participants and to obtain clearance from various boards and trustees.

Selection of the Sample

Two proposals for selecting the sample to be studied were advanced: one, that the sample be selected at random from all health departments; and the other, that the sample be selected on the basis of geography, size of the agency, and the urban or rural nature of the population served from only "good," or "better than average," agencies. Discussions concerning the relative merits of the two proposals produced a decision to use the latter. The project thus became a field investigation to inventory the activities and backgrounds of public health workers in selected "better than average" State and local health departments in the United States.

"Better than average" health departments were chosen on the basis of the value judgments of the consultants and advisers to the project. The basic criteria used were the comprehensiveness of the public health program, the adequacy of the public health staff to serve the area and its population, and the quality of staff performance. Selection was made as the result of consideration of many factors, and, therefore, "inferior" as well as "superior" practices were found in the agencies chosen.

The judgment of the State health officer and the director of local health services was relied upon for the selection of local units within each State. These judgments sometimes were augmented by the opinions of a conference committee of local health officers.

Composition of the Sample

The project obtained information on 1,648 persons actively engaged in public health enterprises in Colorado, Connecticut, Florida, Maryland, Michigan, and New York. Of these, 1,608 were employed in official agencies and visiting nurse associations, and 40 in voluntary health agencies. (Unless otherwise stated, the term

Table 2. Classification of personnel [1] by service and type of agency

Service	State health departments	Local health departments and visiting nurse associations
Medical	47	42
Physicians	45	42
Others	2	
Dental	8	8
Dentists	6	4
Dental hygienist	2	4
Nursing	47	440
Graduate nurses	46	431
Practical nurses		3
Physiotherapists	1	6
Sanitation	76	103
Engineers	41	14
Veterinarians	3	8
Sanitarians (holding college degrees)	24	32
Others	8	49
Administration	14	4
Health education	12	10
Health educators (graduates of schools of public health)	3	6
Others	9	4
Statistics	32	6
Statisticians (with academic statistical training)	8	1
Others	24	5
Laboratory	222	30
Scientists (holding college degrees)	122	21
Technicians	59	6
Ancillary workers	41	3
Secretarial	69	61
Nutrition	12	3
Social work	14	6
Venereal disease investigation	18	1
Other services	14	4
Total	585	718

[1] In Connecticut, Maryland, Michigan, and New York, which comprised the sample used in most of the analyses of the data.

"local health departments" is used in this report to include visiting nurse associations.) The cooperation of the participating agencies was particularly gratifying.

The geographic distribution of the sample (with the exception of the 40 persons in voluntary health agencies) can be seen in table 1. Since Colorado and Florida were visited early in the course of the project, coverage was incomplete in these States in light of the criteria eventually established for the selection of personnel and the nature of the information to be elicited. Therefore, data obtained from these States were not included in most of the analyses.

Included in the study were all full-time, paid public health workers with professional, technical, or administrative responsibility for public health administration. Generally excluded were persons whose responsibilities were limited to clinical medicine, research, or hospital management or whose activities were uncommon in public health or were strictly routine. On this basis, most clerical workers were excluded, but secretaries with technical or administrative responsibilities were included.

If two or more employees performed essentially the same activities, only one of them was interviewed as representative of the group. The job activity information for this representative worker was duplicated for each worker with similar activities. As a result, it was possible to gain the desired information about the activities of the 1,303 persons who comprise the sample used in most of the analyses by interviewing 752, or 58 percent of them.

The personnel studied belonged to the medical, dental, nursing, sanitation, administration, health education, statistics, laboratory, secretarial, nutrition, social work, and venereal disease investigation services. The term service as used in this study refers to an administrative unit defined by the methods employed rather than the programs pursued. Services are frequently but not always synonymous with discipline. Thus, most nurses are members of a nursing service, but an occasional nurse is engaged in health education, hospital administration, or sanitation, for example.

The service classification of the participants in this study is shown in table 2. In terms of numbers, the major services in both State and local health departments were medical, nursing, sanitation, laboratory, and secretarial.

Position in the hierarchy of the organization also was used in the comparison of the various activities of public health workers. The composition of the sample according to administrative level is shown in table 3. For most purposes comparisons were made between high-echelon and staff personnel, but in some instances the executive and supervisor-consultant subdivisions of high-echelon personnel were used.

Summary and Conclusions

The Yale Public Health Personnel Research Project was aimed at determining the activities of public health workers, their backgrounds,

Table 3. Classification of personnel [1] by position in the administrative hierarchy and type of agency

Position in the administrative hierarchy	State health departments	Local health departments and visiting nurse associations
High-echelon personnel	**171**	**161**
Executive personnel	99	80
Health officer	3	20
Assistant health officer	1	5
Program director	77	45
Assistant program director	12	6
Administrative assistant	6	4
Supervisor-consultant personnel	72	81
Consultant	53	19
Supervisor	19	62
Staff personnel	**414**	**557**
Senior staff	58	55
Junior staff	356	502
Total	**585**	**718**

[1] In Connecticut, Maryland, Michigan, and New York, which comprised the sample used in most of the analyses of the data.

and their personal reactions to their jobs. The study was an inventory, not an evaluation. In the course of the project, problems of scope, sampling, and method were encountered and were resolved more or less satisfactorily.

Interviews, with a minimum of formal direction on the part of the interviewer, were used to obtain information from the participants. A detailed universal code was developed for classifying the data, after it became evident by trial that the use of a separate code for each of several categories of personnel would limit the possibility of making comparisons.

The health departments participating in the study were chosen as representative of "better than average" agencies. Because of the sample used, the findings may not necessarily have broad application to public health practice in the United States, but we think they do add to our meager knowledge.

One great handicap under which the project labored was the failure to provide for a complete pilot run before the major data-gathering commitments were undertaken. The development and testing of the investigative instruments and methods proved to be more significant in this study than the collecting of data.

Agencies Participating in Personnel Study

Colorado

Colorado State Department of Public Health, Colorado State Tuberculosis Association, Denver Department of Health and Hospitals, Denver Tuberculosis Association, El Paso County Health Department, El Paso Visiting Nurse Association, El Paso Tuberculosis Association, Mesa County Health Department, Mesa County Cancer Society.

Connecticut

Connecticut State Department of Health, Connecticut State Tuberculosis Association, Greenwich Department of Health, Greenwich Public Health Association, Hamden Department of Health, Hamden Visiting Nurse Association, Hartford City Department of Health, Hartford Tuberculosis Association, Hartford Visiting Nurse Association, New Britain Department of Health, New Britain Tuberculosis Association, New Britain Visiting Nurse Association, New Britain Cancer Society, New Haven Department of Health, New Haven Tuberculosis Association, New Haven Visiting Nurse Association, Waterbury Department of Health, Waterbury Tuberculosis Association, Waterbury Cancer Society.

Florida

Florida State Board of Health, Alachua County Health Department, Broward County Health Department, Clay County Health Department, Dade County Health Department, Dade Visiting Nurse Association, Franklin County Health Department, Highlands-Glades-Hendry District Health Department, Hillsborough County Health Department, Leon County Health Department, Volusia County Health Department, Volusia Visiting Nurse Association.

Maryland

Maryland State Department of Health, Caroline County Health Department, Harford County Health Department, Howard County Health Department, Montgomery County Health Department, Washington County Health Department.

Michigan

Michigan Department of Health, Michigan State Cancer Society, Michigan Tuberculosis Association, Calhoun County Health Department, Calhoun Tuberculosis Association, Chippewa-Luce-Mackinac District Health Department, District Health Department Number One, Kalamazoo County Health Department, Kalamazoo Tuberculosis Association, Kalamazoo Cancer Society, Oakland County Health Department, Oakland Tuberculosis Association, Ottawa County Health Department, Shiawassee County Health Department, Wayne County Health Department, Wayne County Tuberculosis Association, Wayne Out-County Chapter of the Michigan Society for Crippled Children and Adults.

New York

Nassau County Health Department.

Venereal Disease Among Teen-Agers

—*Its Relationship to Juvenile Delinquency*—

By JAMES F. DONOHUE, B.S., M.P.H., GERALDINE A. GLEESON, A.B., KENNETH H. JENKINS, B.S., and ELEANOR V. PRICE

LIMITATION of funds and personnel for venereal disease control has made it necessary to pinpoint insofar as possible the segments of the population in which venereal disease occurs most often and to which epidemiology can most effectively and profitably be applied. With this major objective, a project was initiated to collect morbidity data by age since up to this time only scattered information was available as to the age composition of reported cases.

With increasing attention being given to problems of youth, such data would also provide an opportunity to study the venereal disease problem among teen-agers. In addition, it was deemed important to determine the relative frequency of reported venereal disease among young adults as compared to older persons. It was anticipated that the findings from the analysis of these data would greatly increase our knowledge of the venereal disease problem, improve our case-finding efficiency, and heighten the accuracy of our estimates of the incidence and prevalence of syphilis and gonorrhea.

Mr. Donohue is chief statistician and Mrs. Gleeson, Mr. Jenkins, and Mrs. Price are statisticians in the Venereal Disease Program, Division of Special Health Services, Public Health Service. *This paper is based on morbidity data furnished by State and city health departments.*

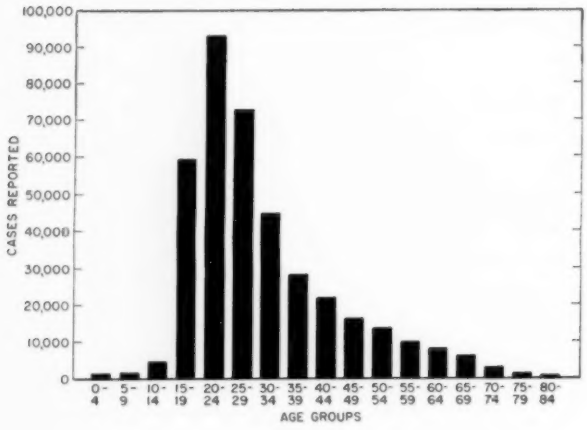
Morbidity reports routinely submitted by State and city health departments indicate the number of cases reported by disease, stage of disease, race, sex, and reporting source, but do not provide any information relating to age. Reporting areas were therefore requested to prepare a special report of venereal disease cases by single years of age for all syphilis and gonorrhea cases reported in the calendar year 1953.

Response to this request was quite gratifying. Only one State and one large city were not able to submit tabulations by age. In terms of total cases, based on routine morbidity reports, 83 percent of syphilis cases and 77 percent of gonorrhea cases were reported by individual year of age. For purposes of this study, cases of unknown age have been prorated on the basis of known age distributions.

This report, the first to be published on this study, will consider in general that portion of the venereal disease problem which occurs among persons under 20 years of age and will relate these data to juvenile delinquency and other problems of youth.

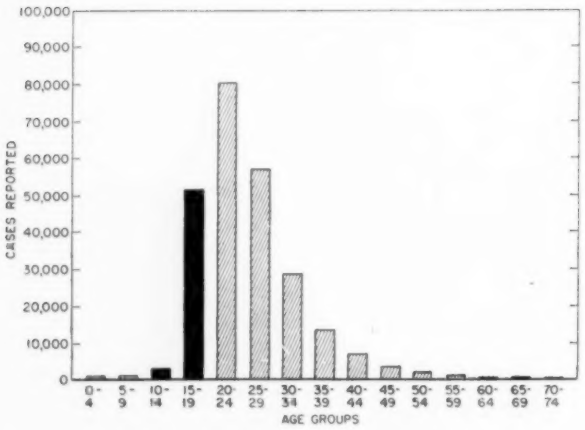
Figure 1 shows the general pattern of the age distribution of the total cases of syphilis (all stages) and gonorrhea in the United States by 5-year age groups. A glance at the chart shows that the curve is peaked at the 20–24 year age group and is skewed to the right. The abrupt increase in cases at ages 15–19 years indicates how very serious the venereal disease problem is after age 14.

Figure 1. Total cases of syphilis and gonorrhea reported in continental United States for the calendar year 1953, by age.



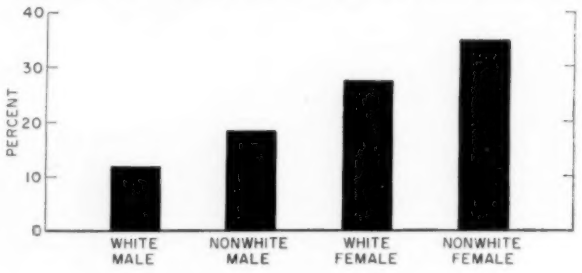
Epidemiology and the principles of preventive medicine can be applied most productively to the infectious stages of venereal disease. Figure 2 shows the age distribution of primary and secondary syphilis and gonorrhea by 5-year age groups. A higher proportion of the venereal disease cases in this chart are in the younger age groups than in figure 1 since syphilis cases of long duration are excluded. The chart represents the age distribution of fresh cases of venereal infections. Again there is a sharp increase in cases in the group aged 15–19 years.

Figure 2. Cases of primary and secondary syphilis and gonorrhea reported in continental United States in the calendar year 1953, by age.



It will be noted from table 1 that 22.4 percent of infectious venereal disease in the United States is reported among persons under 20 years of age. The proportion that infectious venereal disease is of the total syphilis and gonorrhea reported at any given year of age is also shown in table 1. It will be observed that this percentage increases from age 11 to a maximum at age 18 and then gradually decreases with age. Although this percentage represents all infectious venereal disease, it is believed that most of the infections at age 10 and below were probably acquired innocently.

Figure 3. Percentage of total cases of infectious venereal disease reported among persons under 20 years of age, by race and sex.



Infectious Venereal Disease Under Age 20

Infectious venereal disease is diagnosed more often among males than among females because of more obvious signs or painful symptoms in the male. However, blood testing surveys have shown that both sexes have equal syphilis prevalence rates. Another factor which must be considered is the very significant difference in both incidence and prevalence of venereal disease between whites and nonwhites. In analyzing the relative frequency of infectious venereal disease reported among teen-agers we must compare the number of cases under age 20 in each race-sex group with the total number of cases for that group to demonstrate how the percentage of infectious venereal disease under age 20 varies among the four race-sex groups.

Figure 3 shows how the percentage of infectious venereal disease in persons under age 20 varies with sex and race. The proportion of cases in this age group ranges from less than 12 percent among white males to more than 34 percent among nonwhite females. Females of both races have a higher proportion of cases in per-

sons under 20 years of age than do males, and for each sex, the rate for nonwhites is higher than the rate for whites. This is true for every State as well as for the Nation as a whole. Table 2 shows the percentage of infectious venereal disease cases for males and for females under age 20 for each of the 45 States participating in the study. Wide ranges occur between States, and percentages for all teen-agers vary from 9.6 percent to 33.9 percent.

Figure 4 presents the percentage of infectious venereal disease among persons under 20 years of age in the various States. It shows that the greater proportions by and large coincide with the States having the greater total venereal disease problems. These States have characteristically operated vigorous control programs during the past decade, but their socioeconomic levels and the age and race distributions of their populations have placed them in a relatively unfavorable, although improving, situation with respect to most health problems. The high percentages of venereal disease among teen-agers in these areas are therefore a valid measure of how far the venereal disease control programs in these States have yet to go before the venereal disease aspect of their total youth problem compares favorably with that of States having low percentages of infectious venereal disease among their youth. We have used this percentage of infectious venereal disease among persons under 20 years of age as an index of the venereal disease problem among teen-agers, and we have related it to other problems of youth.

Table 1. Cases of primary and secondary syphilis and gonorrhea reported in continental United States, calendar year 1953, by age

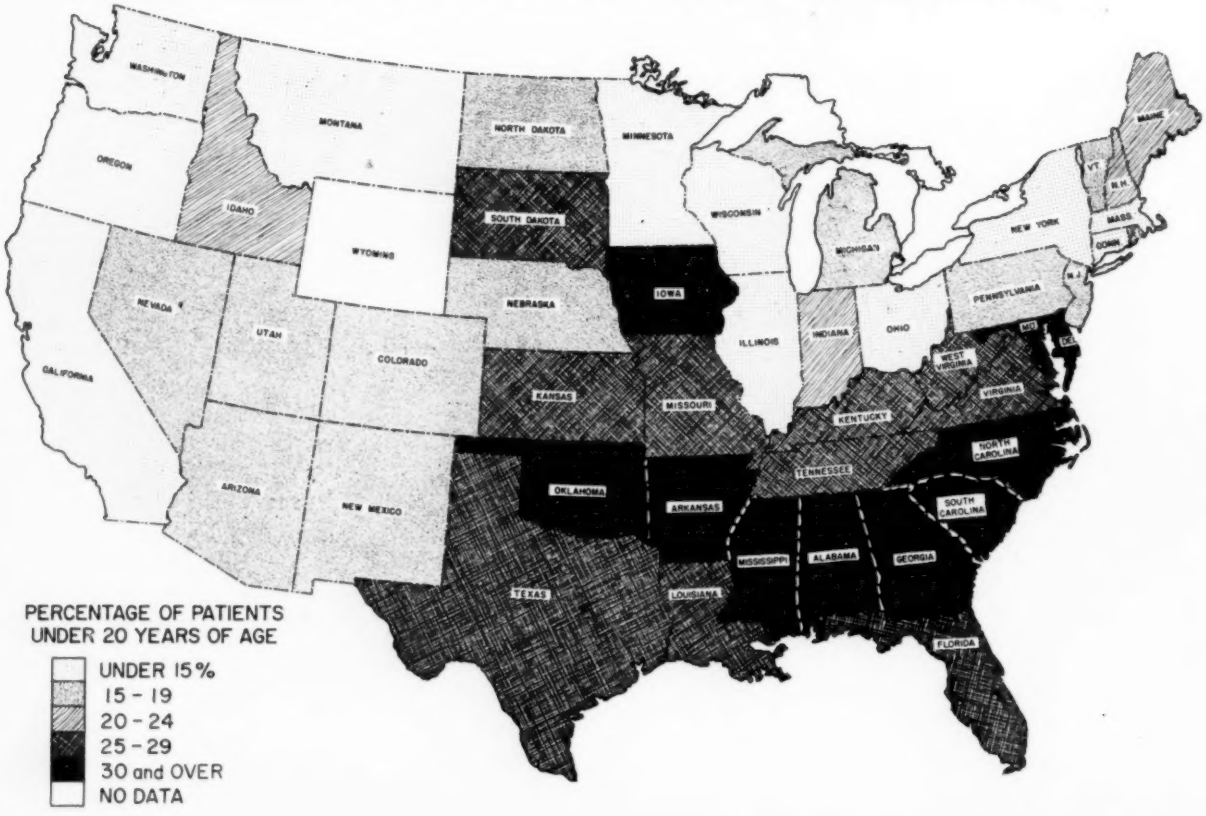
Age	Total syphilis and gonorrhea			Primary and secondary syphilis and gonorrhea			Percent primary and secondary syphilis and gonorrhea of total syphilis and gonorrhea
	Number	Percent	Cumulative percent	Number	Percent	Cumulative percent	
Less than 1	514	0. 13	0. 13	206	0. 08	0. 08	40. 08
1	192	. 05	. 18	51	. 02	. 10	26. 56
2	225	. 06	. 24	138	. 06	. 16	61. 33
3	196	. 05	. 29	137	. 06	. 22	69. 90
4	235	. 06	. 35	162	. 07	. 28	68. 94
5	271	. 07	. 42	158	. 06	. 34	58. 30
6	313	. 08	. 50	159	. 06	. 40	50. 80
7	321	. 08	. 58	136	. 06	. 46	42. 37
8	312	. 08	. 66	114	. 05	. 51	36. 54
9	340	. 09	. 75	114	. 05	. 56	33. 53
10	381	. 10	. 85	100	. 04	. 60	26. 25
11	356	. 09	. 94	73	. 03	. 63	20. 51
12	586	. 15	1. 09	200	. 08	. 71	34. 13
13	1, 085	. 28	1. 37	619	. 25	. 96	57. 05
14	2, 242	. 58	1. 95	1, 612	. 65	1. 61	71. 90
15	4, 174	1. 08	3. 03	3, 322	1. 35	2. 96	79. 59
16	7, 369	1. 90	4. 93	6, 208	2. 51	5. 47	84. 24
17	11, 710	3. 03	7. 96	10, 312	4. 18	9. 65	88. 06
18	17, 504	4. 52	12. 49	15, 483	6. 27	15. 91	88. 45
19	18, 499	4. 78	17. 27	16, 072	6. 51	22. 42	86. 88
20–24	93, 390	24. 14	41. 41	80, 306	32. 52	54. 94	85. 99
25–29	72, 935	18. 85	60. 26	56, 729	22. 97	77. 91	77. 78
30–34	44, 553	11. 51	71. 77	28, 349	11. 48	89. 39	63. 63
35–39	28, 411	7. 34	79. 11	13, 072	5. 29	94. 68	46. 01
40–44	21, 922	5. 68	84. 78	6, 774	2. 74	97. 42	30. 90
45–49	16, 112	4. 16	88. 94	3, 201	1. 30	98. 72	19. 87
50–54	13, 569	3. 51	92. 45	1, 698	. 69	99. 40	12. 51
55–59	9, 924	2. 56	95. 02	753	. 30	99. 70	7. 59
60–64	8, 020	2. 07	97. 09	383	. 16	99. 86	4. 78
65–69	6, 045	1. 56	98. 65	216	. 09	99. 95	3. 57
70–74	3, 008	. 78	99. 43	86	. 03	99. 98	2. 86
75–79	1, 398	. 36	99. 79	27	. 01	99. 99	1. 93
80+	801	. 21	100. 00	7	. 00	100. 00	. 87
Total	386, 913	100. 00	----------	246, 977	100. 00	----------	63. 83

Table 2. Percentage of all gonorrhea and primary and secondary syphilis cases reported among persons under 20 years of age by State

State	Male	Female	Total
Connecticut	6.0	25.4	9.6
Maine	13.3	48.8	23.7
Massachusetts	5.7	25.1	10.9
New Hampshire	0	42.1	20.0
Rhode Island	10.4	36.7	16.7
Vermont	13.5	21.1	16.1
Delaware	26.5	50.0	33.9
New Jersey	12.3	29.6	17.3
New York	9.4	24.6	11.6
Pennsylvania	14.3	31.2	19.4
District of Columbia	N. D.	N. D.	N. D.
Kentucky	21.0	33.8	25.3
Maryland	24.2	48.6	31.6
North Carolina	24.4	42.2	31.3
Virginia	22.1	32.2	27.9
West Virginia	17.6	38.9	29.4
Alabama	27.8	45.7	33.5
Florida	22.8	34.7	26.3
Georgia	27.1	38.6	31.5
Mississippi	24.4	39.2	30.0
South Carolina	25.2	42.2	30.5
Tennessee	19.5	32.9	25.8
Illinois	10.6	25.3	14.3
Indiana	15.7	38.8	23.0
Michigan	16.3	24.5	19.7
Ohio	10.0	23.5	14.1
Wisconsin	8.8	25.2	13.6
Iowa	16.2	51.2	32.7
Kansas	17.6	39.8	27.4
Minnesota	7.2	20.9	11.2
Missouri	20.1	37.3	25.8
Nebraska	10.7	24.5	17.2
North Dakota	N. D.	N. D.	18.5
South Dakota	27.0	42.2	28.1
Arkansas	25.3	41.1	33.2
Louisiana	22.1	35.7	26.7
New Mexico	15.0	27.3	19.1
Oklahoma	24.0	40.0	31.7
Texas	22.2	36.6	27.9
Colorado	9.2	24.1	15.6
Idaho	12.4	35.9	22.3
Montana	3.4	25.0	11.3
Utah	11.5	32.3	18.5
Wyoming	N. D.	N. D.	N. D.
Arizona	15.3	32.6	19.1
California	9.8	25.1	14.1
Nevada	14.6	33.3	19.3
Oregon	6.0	31.5	12.7
Washington	6.1	20.0	11.8

N. D.—No data.

Figure 4. Infectious venereal disease among teen-agers in the United States.



Infectious venereal disease reported in persons 10–19 years of age is separated in figure 5 into its two components, primary and secondary syphilis and gonorrhea, in an effort to distinguish sexually acquired from nonsexually acquired infections. It will be observed that the age distribution for primary and secondary syphilis, which is rarely nonsexually acquired, is in general the same as for gonorrhea. In both diseases, the upward swing begins in females at age 12 and in males at age 14, and illustrates the point that infectious venereal disease is sexually acquired at a much earlier age than has been realized. Females have a higher proportion of cases than males in the earlier years up to age 17, at which age the percentage in males becomes higher than in females. As a matter of fact, the 18th year of age is the modal year for all females, whereas the male frequency continues to increase with age into the early twenties. The dip at age 17 among females with primary and secondary syphilis is not explainable unless females at that age claimed to be a year older than they were. This phenomenon does not appear in the gonorrhea distribution, however.

Figure 5. Percentage distribution of cases of primary and secondary syphilis and of gonorrhea reported among males and females aged 10–19 years.

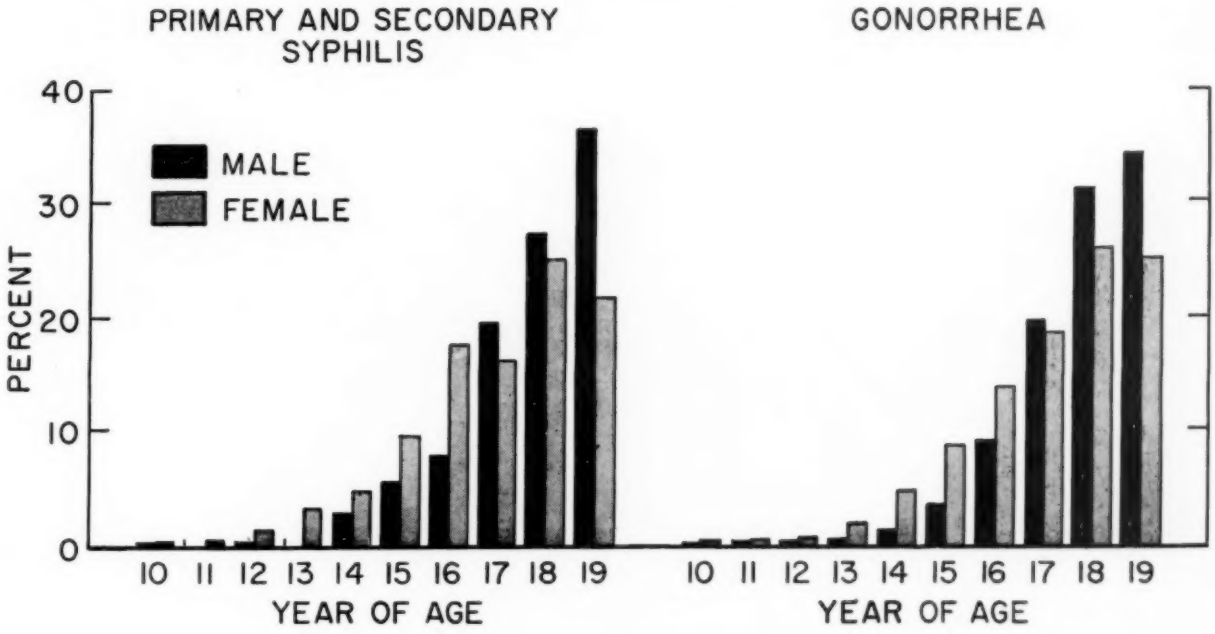


Table 3 and figure 6 show the cumulative percentages of infectious venereal disease cases in persons 10–19 years of age, by sex. Since there were no appreciable differences in the percentage distributions by race, these data were not shown separately by race. The cumulative percentage of infected females is higher than the cumulative percentage of infected males at each age from 10 through 18 years. The greatest difference in cumulative percentage is at age 16 where the difference is 15.9 percent. The curves indicate that 50 percent of the females in the group 10–19 years of age become infected by the time they reach the age of 17.5 years whereas 50 percent of the males become infected by the time they reach the age of 18.0 years. The quartile horizontal line shows that 25 percent of the females are infected by age 16.1 years whereas one-fourth of the males become infected by age 17.0 years.

Charts 7–11 are scatter diagrams, which present a graphic picture of the association between infectious venereal disease among teen-agers and certain other problems of youth. The rate (or percentage) of infectious venereal disease cases among persons under 20 years of age in a

Table 3. Cases of infectious venereal disease reported among males and females aged 10–19 years

Age	Sex						Excess of female over male
	Male			Female			
	Number	Percent	Cumulative percent	Number	Percent	Cumulative percent	Cumulative percent
10	16	0. 08	0. 08	58	0. 28	0. 28	0. 20
11	15	. 07	. 15	48	. 23	. 51	. 36
12	37	. 18	. 32	129	. 62	1. 12	. 80
13	71	. 34	. 66	418	2. 00	3. 12	2. 46
14	289	1. 37	2. 02	984	4. 71	7. 83	5. 81
15	752	3. 56	5. 58	1, 836	8 78	16. 61	11. 03
16	1, 921	9. 09	14. 67	2, 915	13. 94	30. 55	15. 88
17	4, 142	19. 60	34. 27	3, 876	18. 53	49. 08	14 81
18	6, 606	31. 25	65. 52	5, 428	25. 96	75. 03	9. 51
19	7, 288	34. 48	100. 00	5, 221	24. 97	100. 00	. 00
Total	21, 137	100. 00		20, 913	100. 00		

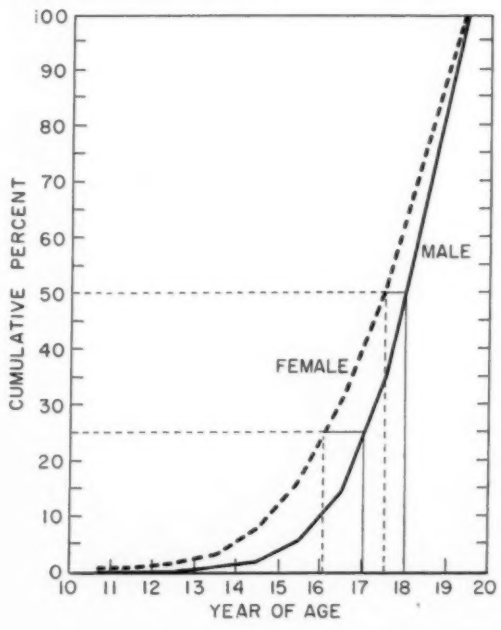
State is plotted on the X-axis, and the extent of other youth problems is plotted on the Y-axis. Each point represents a State for which measures of both variables are available.

It should be mentioned that a significant coefficient of correlation does not necessarily indicate a *causal* relationship but does illustrate that a definite association exists between two variables within the same segment of the population.

The degree of association between two series plotted as indicated above is calculated by the correlation method and is measured in relative terms by the coefficient of correlation which ranges in numerical value from 0 to ± 1. A value of $+1$ would mean that there is a perfect direct relationship, that is, an increase in X results in a definite increase in Y. A value of $r = 0$ would indicate that there is no association whatsoever between the two variables, and a value of $r = -1$ would mean a perfect inverse relationship. Rarely would one expect to find such values of a coefficient correlation computed from actual data. The less perfect the relationship between the two variables, the greater the departures (or scatter) from the line of regression.

All correlations shown in this paper have been tested for statistical significance. All but one were significant at the 1-percent level, meaning that there is less than 1 chance out of 100 of finding such a degree of correlation by chance in unassociated data. The single exception is the correlation relating venereal disease and illegitimacy (fig. 8), which was significant at the 2-percent level.

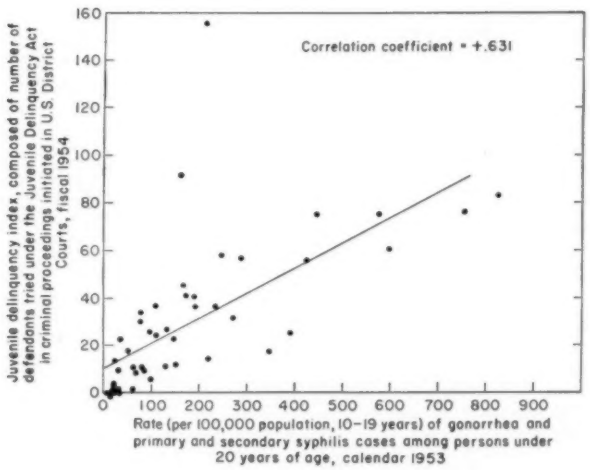
Figure 6. Cumulative percentage distribution of infectious venereal disease reported among males and females aged 10–19 years.



It should be mentioned that there is a paucity of statistics on juvenile delinquency which are comparable from State to State. The problem

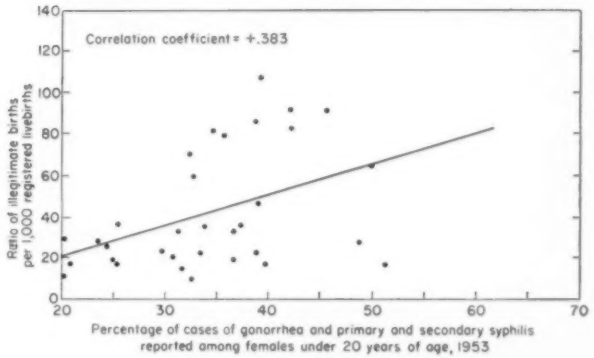
is that the laws and interpretations of laws concerning juvenile delinquency vary greatly between States. In fact, interpretations vary within States. Variable factors include age, sex, nature of crime, conditions in home, status of parents, intelligence of juvenile, education, probation, court procedures, and so on. Furthermore, there is no standard procedure for reporting juvenile delinquency statistics, and many States do not even have a central reporting agency for juvenile court statistics.

Figure 7. Scatter diagram relating infectious venereal diseases and juvenile delinquency reported by 47 States.


Correlation coefficient = +.631
Juvenile delinquency index, composed of number of defendants tried under the Juvenile Delinquency Act in criminal proceedings initiated in U.S. District Courts, fiscal 1954
Rate (per 100,000 population, 10–19 years) of gonorrhea and primary and secondary syphilis cases among persons under 20 years of age, calendar 1953

The only available data on juvenile delinquency which are statewide in coverage and which meet the criteria of consistency between States appear in the annual report of the Administrative Office of the United States Courts (*1*). The number of defendants in criminal proceedings tried under the Juvenile Delinquency Act (Title 18, sec. 5031) in the United States district courts is used as an index of juvenile delinquency in each State. Figure 7 shows the number of cases of infectious venereal disease per 100,000 population under 20 years of age in 47 States plotted against a juvenile delinquency index for each State, based on the number of defendants in criminal proceedings initiated in United States district courts during fiscal year 1954. The coefficient of correlation was equal to plus .631, which indicates a significant positive association between the infectious venereal disease rate among teen-agers and juvenile delinquency as represented by the number of criminal proceedings for Federal offenses among the same age group population.

Figure 8. Scatter diagram relating infectious venereal disease and illegitimacy reported by 32 States.


Correlation coefficient = +.383
Ratio of illegitimate births per 1,000 registered livebirths
Percentage of cases of gonorrhea and primary and secondary syphilis reported among females under 20 years of age, 1953

The dependent variables in the remaining figures are statistical data concerning problems of the same population segment as published by the National Office of Vital Statistics and the Census Bureau. In figure 8 the percentage of cases of infectious venereal disease among females under 20 years of age is plotted against the illegitimacy ratio reported in 32 States, which is used as a measure of promiscuity (*2*). The coefficient of correlation was equal to plus .383, which indicates a positive association between the percentage of infectious venereal disease among female teen-agers and the ratio of illegitimate births per 1,000 live births registered.

Figure 9 shows the percentage of cases of infectious venereal disease among females un-

Figure 9. Scatter diagram relating infectious venereal disease and fetal deaths reported by 46 States.

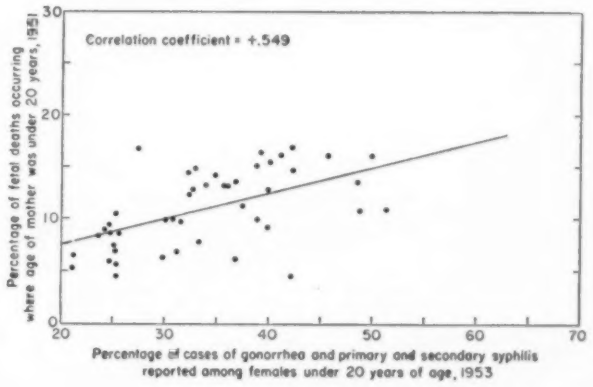
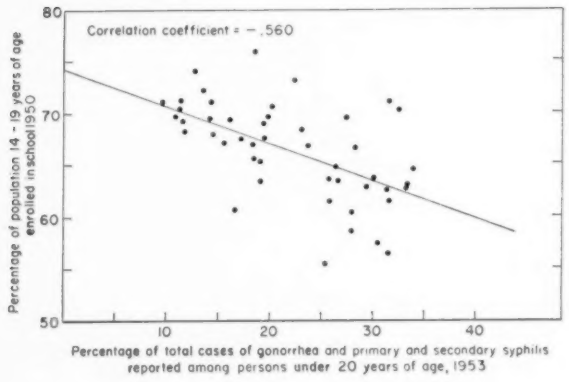

Correlation coefficient = +.549
Percentage of fetal deaths occurring where age of mother was under 20 years, 1951
Percentage of cases of gonorrhea and primary and secondary syphilis reported among females under 20 years of age, 1953

Figure 10. Scatter diagram relating infectious venereal disease and school enrollment reported by 47 States.


Correlation coefficient = −.560
Percentage of population 14 - 19 years of age enrolled in school 1950
80
70
60
50
10
20
30
40
Percentage of total cases of gonorrhea and primary and secondary syphilis reported among persons under 20 years of age, 1953

der 20 years of age plotted against the percentage of fetal deaths (abortions, miscarriages, and stillbirths) occurring among mothers under 20 years of age reported by 46 States (*2*). The coefficient of correlation was plus .549 and indicates that a significant association exists between venereal disease and fetal deaths among teen-age mothers. This does not mean that venereal disease necessarily caused the fetal deaths, although venereal disease among pregnant women can result in disastrous outcome.

The percentage of infectious venereal disease among persons under 20 years of age is plotted in figure 10 against the percentage of the population 14–19 years of age enrolled in school (*3*) in 47 States. The coefficient of correlation was minus .560, which indicates a significant inverse relationship between percentage of school enrollment and the percentage of infectious venereal disease among persons under 20 years of age. This negative association indicates that the higher the percentage of teen-agers in school the lower the venereal disease attack rate among this age group.

Figure 11. Scatter diagram relating infectious venereal disease and extent of low family income, reported by 47 States.

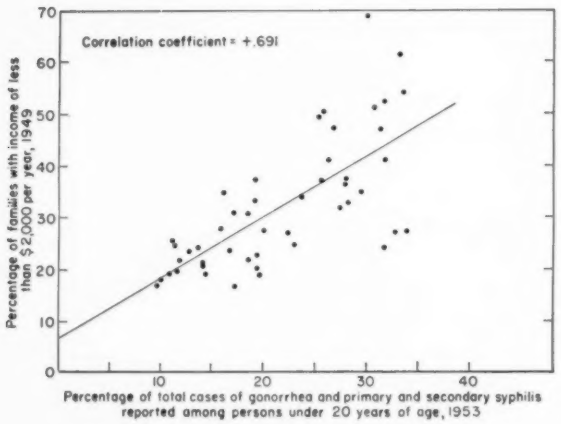


Figure 11 shows the percentage of total cases of gonorrhea and primary and secondary syphilis reported among persons under 20 years of age plotted against the percentage of families with incomes of less than $2,000 per year (*3*). The coefficient of correlation was plus .691 and indicates that there exists a significant positive association between venereal disease and this measure of financial status. This should be expected since it is well known that the lower the socioeconomic level the higher the venereal disease rate.

Discussion

All the evidence presented points to the fact that there is a definite degree of association between teen-age venereal disease and other problems of youth. The extent of venereal disease among teen-agers varies directly with criminal proceedings for Federal offenses among the same age group, promiscuity among persons under 20 years of age, fetal deaths among teen-age mothers, and lack of financial stability and varies inversely with educational status. This latter point is the one encouraging aspect of the problem since the higher percentage of juveniles enrolled in school, the lower the venereal disease attack rate in this age group.

The meaning of venereal disease among teen-agers might be interpreted in several ways. It could be argued that in a country where there is considerable incidence of infectious venereal disease, it is only natural that sexually active teen-agers account for a substantial proportion of all venereal infections. On the other hand, a youngster infected with a venereal disease has obviously deviated from the accepted pattern of approved social behavior. In this sense, venereal disease itself might be considered a manifestation of the broad problem of juvenile delinquency.

These correlations highlight again an im-

portant phase of the Nation's prospects in the field of health: The protection which adequate income, wise and well-organized communities, and familial and social guidance can give to our American youth has indirect benefits in the field of health. The correlations indicate that venereal disease is but one of the problems to which our less-protected and therefore less-privileged youth is exposed.

Current indications of increases of venereal disease in many States, recent outbreaks of venereal disease involving high percentages of teen-agers, and the extensive juvenile delinquency which has recently been of so much general concern highlight the serious problem which exists in our venereal disease control program and to which our utmost efforts must now be directed.

That the venereal disease program, as well as other health programs, was able during the last decade to make headway in the presence of other youth problems arises largely from the fact that the techniques of case finding, diagnosis, and treatment, vigorously supported with local, State, and Federal funds, acquired a momentum greater than the speed at which these diseases were transmitted. This reduction in incidence and prevalence of venereal diseases among teen-agers might be envisioned not only as a specific accomplishment in disease control but as part of our total effort toward giving youth protection against the many hazards of growing up; as part of the Nation's effort to create a favorable climate and soil for its most important product.

REFERENCES

(1) U. S. Administrative Office of the United States Courts: Annual report of the director. Washington, D. C., U. S. Government Printing Office, 1954.

(2) U. S. National Office of Vital Statistics: Vital statistics of the United States: 1951. I. Analysis and summary tables. Washington, D. C., U. S. Government Printing Office, 1954.

(3) U. S. Bureau of the Census: United States census of population. II. Characteristics of the population. Part 1. Summary. Washington, D. C., U. S. Government Printing Office, 1953.

Legal Note on Commitment of Insane Federal Prisoners

The United States Court of Appeals for the Eighth Circuit, in an opinion dated February 14, 1955, held that any insane or mentally incompetent Federal prisoner may be committed to the custody of the Attorney General regardless of the probable duration of his illness, *Greenwood* v. *United States*, 23 U. S. L. Week 2411.

This decision is in conflict with prior cases from two other circuits, the 9th and 10th. In the cases of *Wells* v. *Attorney General*, 201 F. 2d 556 (C. C. A. 9th, 1953), and *Higgens* v. *United States*, 205 F. 2d 650 (C. C. A. 10th, 1953) it was held that such commitments must be limited to *temporarily* insane prisoners pending their trial since any attempt by Congress to authorize the commitment of other than temporarily insane prisoners would be unconstitutional as an invasion of the general field of lunacy which is reserved to the States by the 10th amendment. The *Wells v. Attorney General* case was noted in the August 1953 issue of *Public Health Reports*, page 825.

In the *Greenwood* case, however, the court held that the power to provide for the commitment of insane or incompetent prisoners to the custody of the Attorney General was a necessary incident to the power to provide for the enforcement of the Federal criminal laws. With regard to the invasion of the "general field of lunacy," the court said that: "No valid objection can be based upon the fact that such exercise may be attended by the same incidents which attend the exercise by a State of its police power, or that it may tend to accomplish a similar purpose."

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A history of efforts to control gonorrheal infection in the eyes of the newborn child.

Ophthalmia Neonatorum

By C. A. SMITH, M.D., and LAURA HALSE, M.S., LL.B.

ONE of the most dramatic and heartwarming achievements of the effort to control venereal disease has been the reduction of blindness in babies resulting from infection with gonorrhea by the mother during birth. The great advances in the prevention of ophthalmia neonatorum were made before the era of sulfonamides and the antibiotics; they resulted from the very simple, so it seems now, procedure of placing silver nitrate solution or other effective silver preparation in the eyes of the child immediately after birth. These preparations, of little value in treatment once the disease is established, are highly effective in preventing infection in the eye. Simple as the procedure is, its introduction as part of the routine of public health and medical practice required devoted and inspired activity by various leaders and groups. The story of these events should be known in order to understand today's laws and practices.

Gonococcal infection in the eyes of a baby, so-called gonorrheal ophthalmia neonatorum, is swift and severe. If untreated, it can lead to blindness in a very short time. In fact, without treatment, about 90 percent of the babies infected with ophthalmia neonatorum will become blind. The most common means of infection is through contamination of the baby's eyes during passage through the birth canal. However, infection of the eyes also can occur if they are contaminated by discharges from another individual with gonorrhea in the child's environment.

Signs of the infection usually appear within 48 hours of birth or other exposure to infected material. One or, usually, both eyelids become swollen; there is profuse discharge of pus; the eyes redden; and, in a short time, the cornea becomes dull and hazy. If treatment is not given, the cornea ulcerates, and an infection develops inside the eyeball. This usually leads to blindness in the infected eye.

Although, according to medical literature, this sequence of events was long known, it did not become the subject of intensive study until the early part of the 19th century. However, clinical syndromes which, in retrospect, can be accepted as probable gonorrheal ophthalmia had been described earlier, and it appears that a relationship between genital disease of the mother and the ocular infection of the child was postulated.

Early Studies

Quellmalz in 1750 insisted there was a connection between leukorrhea in the mother and ophthalmia in the newborn child (*1*). Goetz (*2*) in 1791 accepted this view and wrote a treatise on ophthalmia in the newborn child.

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In 1808, Gibson, an English obstetrician, observed a connection between the strange malady known as "babies' sore eyes" and the discharge present in the birth canal of the mother (*3*). He reported that careful cleansing of the mother's body and the wiping of mucus from the baby's eyes after birth might prevent an infection which often led to lifelong blindness. But his colleagues paid little attention to his advice. At that time, in accordance with prevalent theories on causation of disease, doctors explained to mothers of babies who had lost their eyesight at birth that this condition was due to such causes as the peculiar constitution of the atmosphere or sudden changes of temperature. Colds were assumed to be the cause of inflamed eyes. This belief was so widespread that Cortez, the Spaniard, in 1837 decreed that all babies should be baptized with warm water instead of cold water.

In 1820, Vetch, by experimental inoculation of female genital secretion, was able to produce ocular inflammation, suggesting the truth of Gibson's assertion (*4*). In 1879, Albert Neisser, an assistant professor in the University Clinic of Dermatology at Breslau, described a micrococcus that he believed to be the cause of gonorrhea (*5*). His discovery attracted universal attention, coming at a time when the science of bacteriology was developing and numerous investigators in the bacteriological and pathological fields were beginning to carry on research. However, there was considerable doubt in the minds of many scientists as to the role played by the gonococcus in the production of gonorrhea. This was finally resolved by experimental genital inoculation of both gonococcal discharge and cultured gonococci. Then, in 1881, Hirschberg and Krouse demonstrated the gonococcus in patients with ophthalmia neonatorum (*6*).

In spite of discovery of the causative agent of gonococcal infections, therapy for both genital and ocular infections was highly unsatisfactory. The multiplicity of treatment schedules suggested attests to the essential lack of value of any one of them. Thus, as might have been expected, much attention was given to potential means of prevention of ocular infection.

In 1856, Dr. Karl Sigmund Franz Credé was made director of the lying-in-hospital in Leipzig (*7*). After years of experimental studies, he found an agent which would prevent ophthalmia neonatorum. In 1886 he published his epochal treatise (*8*) in which he stated, " . . . if two percent solution of silver nitrate is dropped in the eyes of newborn infants, immediately after birth, the pus germs producing ophthalmia neonatorum could be killed and the development of the disease prevented." His records showed that the disease developed in only 0.17 percent of the cases in which silver nitrate was used, whereas it developed in 10 percent of the cases in which the solution was not used.

Credé's theory and demonstration were not immediately accepted and were, in fact, met by widespread opposition. However, as knowledge of his experience spread, other clinicians began to apply his findings.

In the United States, Dr. Lucien Howe (*7*) became the leader in the fight against ophthalmia neonatorum. He went to Egypt in 1887 and studied purulent ophthalmia; when he returned to the United States he began his campaign against ophthalmia neonatorum. He established and became the director of the Howe Laboratory of Ophthalmology at Harvard, endowing this institution with $1 million from his own fortune. He campaigned in many States for passage of legislation and drew up model laws for the prevention of this disease. It was largely through his efforts that early legislation for compulsory instillation of silver nitrate in the eyes of newborn children was passed. Dr. Howe was so forceful in his pleas for prevention of blindness that he aroused the New York State Medical Society and the American Ophthalmology Society to become actively responsible for legal work for the control of the disease.

In 1905, influenced by Dr. Howe, the New York City Health Department sent out a bulletin instructing all midwives in the use of Credé solution of silver nitrate in the eyes of the newborn child. The bulletin also reemphasized that all sore eyes must be reported to the health department so that medical investigation could be instituted and treatment given when necessary.

The Governor of New York was so impressed by Dr. Howe's enthusiasm and energy that in 1906 he appointed him to the Commission to Investigate the Conditions of the Blind. Dr. Howe and Dr. Park Lewis, president of the commission, assisted in promoting a detailed census of the blind in New York State, which they presented to the legislature in 1907 (*7*). They were also instrumental in establishing the National Society for Prevention of Blindness.

National Society

Included in the report of the census of the blind in New York State was an article by Dr. Lewis entitled "Needlessly Blind," in which, referring to ophthalmia neonatorum, he said ". . . this is a disease the nature of which is fully understood, which might have been controlled or avoided by simple prophylactic or therapeutic measures at the time the infant came into the world."

In 1908, Louise Lee Schuyler read Dr. Lewis' article and became determined to start a movement to acquaint the public with the menace of ophthalmia neonatorum (*7*), and it was her leadership and intelligence which did so much to popularize the movement and which gave real drive to it. With Edith Holt, she organized groups to discuss ways and means of influencing the legislature and of educating the public in the necessity of using prophylaxis to prevent blindness. Miss Schuyler and Miss Holt then organized the New York State Committee for Prevention of Blindness, a private organization.

It soon became apparent to this committee that blindness was a problem of national importance and in 1915, the National Society for the Prevention of Blindness—a lay organization cooperating actively with the medical profession, particularly ophthalmologists, and with official and volunteer health agencies—was organized. The State committee then became a standing committee of the national society.

The objectives of the national society were:

1. To endeavor to ascertain, through study and investigation, any causes, whether direct or indirect, which may result in blindness or impaired vision.

2. To advocate measures which shall lead to elimination of such causes.

3. To disseminate knowledge concerning all matters pertaining to care and use of the eyes.

In the beginning, the society established a cooperative relationship with agencies and societies, official and volunteer, which had either a direct or an indirect responsibility for the prevention of blindness and the conservation of vision. In 1925, it established such a relationship with the Conference of State and Provincial Health Authorities of North America.

The society prepared and distributed literature of particular interest to ophthalmologists, first securing from them approval of the material, and provided slides and moving pictures for use in lectures. It continues to prepare and distribute literature but no longer has slides and moving pictures available.

In 1928, as a result of educational work by the national society, and recognizing the need for preventive work, the New York Commission for the Blind established a department of prevention of blindness and made Sarah Clendinning, R. N., the director. Under Miss Clendinning's leadership, groups were reached through lectures on the prevention of ophthalmia neonatorum.

Statistics

In 1908, ophthalmia neonatorum was responsible for 28 percent of the blindness among new entrants in blind schools (*9*). In 1933, 11 percent of the new entrants in these schools were blind from this disease; by 1950 this figure had been reduced to 1 percent.

In 1923, Dr. Taliaferro Clark and Dr. J. W. Kerr of the Public Health Service wrote: "It has been conservatively estimated that ophthalmia neonatorum is responsible for 20 percent of blindness in the United States. Blindness is not a reportable disease; therefore, statistics had to be gathered largely from institutions for the blind throughout the United States. For this reason, the figures compiled represent only those children that are institutionalized in blind schools" (*7*).

A report issued in 1926 (*10*) showed that in 1907, 28 percent of the blindness in the United States was due to ophthalmia neonatorum; in

1913–17, blindness from this cause had dropped to 19 percent; in 1918–22, it was 16.5 percent; and by 1926, or within 18 years, a decrease of 51.3 percent had occurred.

Before 1930, the most complete and authentic information on the blind was assembled by the Bureau of the Census (*11*). However, this information was incomplete. Only a few State commissions had compiled reports of ophthalmological findings. For causes of blindness, the Bureau of the Census could give only data based on the statements made by blind persons themselves instead of reports of ophthalmological examinations. In many ways, the data were inconsistent and inadequate and often were completely lacking. A special conference was called by the American Foundation for the Blind and the National Society for the Prevention of Blindness to discuss methods of improving statistics on blindness. In 1930, the Committee on Statistics of the Blind was organized and still is sponsored and financed jointly by these two groups.

Early Enactments

In 1922, the Sanitary Code of New York City stated (*12*) ". . . it shall be the duty of every physician, nurse, midwife, or other person in attendance on a confinement case to instill in the eyes of a newborn child immediately after delivery—1 percent solution of silver (nitrate) or an equally effective agent in order to prevent the development of ophthalmia neonatorum."

In 1926, according to a report by the National Society for the Prevention of Blindness, 20 States had definite enactments requiring the use of prophylaxis in the eyes of every newborn child. (Fifteen of these were Alabama, Arizona, Delaware, Georgia, Idaho, Iowa, Maryland, Michigan, Missouri, Rhode Island, Tennessee, Texas, Virginia, West Virginia, and Wisconsin.) Five States—Indiana, Louisiana, North Dakota, Utah, and Washington—had definite enactments requiring the use of prophylaxis under certain qualifying conditions. In 12 States, regulation was under State board of health rulings; Florida and Montana had no law. Thirty States required that the birth certificate indicate whether or not prophylaxis was used and the strength of the prophylactic agent.

Control Measures

Public health workers recognize that the general public is not interested in health per se; a desire for good health is not a dynamic force in securing action to attain it. Even the understanding of the cause of a tragic disease is not essential to action. This situation is exemplified in the ophthalmia neonatorum control program. The cause of the disease is gonorrhea in the mother, yet the early campaigners for preventive legislation practically never mentioned this. They issued pamphlets citing the number of children that were "needlessly blind" because of lack of proper medical care. They discussed methods of educating the public to realize the necessity for using prophylactic measures to prevent "babies' sore eyes" and discussed ways and means of influencing State legislators to pass preventive legislation.

The one exception to this approach was through Dr. William Snow, chairman of the American Social Hygiene Association, an enthusiastic supporter of the program of the National Society for the Prevention of Blindness. He reiterated the known fact that ophthalmia neonatorum would be prevented if gonorrhea were wiped out. At an annual meeting of the American Social Hygiene Association he stated ". . . there are approximately 200,000 blind persons throughout the country and it is estimated that more than 15 percent of those lost their sight because of syphilis and gonorrhea. It is obvious that there is a close relationship between the movement to prevent blindness and the drive to stamp out these diseases."

The campaign for prevention of blindness in babies was directed by and to the socially and economically secure groups. The support of these articulate and well-informed groups has been an important factor in obtaining legislation which required prophylaxis in the eyes of the newborn child. The campaign to eradicate venereal disease during the years 1920–29, although the opposition was neither specific nor ephemeral, did not parallel the success of the ophthalmia neonatorum prevention program. The venereal disease program appeal was made

primarily to middle-class groups, who at that time were reluctant to discuss publicly "sex and social hygiene."

Perhaps control of blindness among babies depends, in the final analysis, upon motivation of the physician, the nurse, or the midwife only, whereas control of venereal disease depends upon the motivation of many individual patients.

The Public Health Service during this period, 1920–29, cooperated with the States in establishing training services in epidemiological studies and research laboratories to determine the causes of blindness. Data were gathered regarding legal provisions for the prevention of ophthalmia neonatorum. Reports concerning venereal diseases as a cause of blindness were published and distributed to State health departments.

Federal, State, Local

Federal authority in health matters does not extend to participation in the exercise of police powers of the State. Federal authority is concerned with interstate and international health problems. The police powers relating to health, safety, and morals within the State borders have been reserved specifically to the States themselves.

The administration of public health in a State is a significant part of general administration. The physician in charge of a State health department has a dual responsibility in the enforcement of health regulations: he must furnish expert professional advice to the State legislators, and, as an administrative officer in the health department, he must protect the health of the people through the control or eradication of disease.

Pennsylvania's experience illustrates State efforts to control ophthalmia neonatorum. In November 1931, the Pennsylvania State Board of Health began an active campaign against ophthalmia neonatorum (*13*). A State law had been passed in 1913, but it left the procedures to be worked out and enforced by the State board of health. The board of health had issued regulations making mandatory instillation of one drop of silver nitrate in the eyes of a newborn child, defined "inflammation of babies' eyes," and required that any evidence of this infection be reported to the local health department. The 1931 campaign, 18 years after passage of enabling legislation, was the result of the widespread failure of physicians or attendants at childbirth to carry out the provisions regarding instillation of a prophylaxis in the eyes of a newborn child, and to report immediately any indication of "sore eyes in a newborn infant."

In the spring of 1951, it came to the attention of Dr. Theodore Appel, secretary of the State board of health, that, of the total enrollment of 289 children in the Overbrook School for the Blind, 51 were blind as the result of ophthalmia neonatorum; and 6 of 45 children who had entered the school the previous year were blind from ophthalmia neonatorum. This situation occurred in spite of the fact that, in Pennsylvania, application of prophylactic treatment to the eyes of a newborn child was mandatory and that "sore eyes" were reportable. Dr. Appel sent out letters to all county medical officers which said, "This Department is deeply concerned to have this law obeyed, and is prepared to enforce it, carrying cases into court when necessary."

Private Organizations

Although State and local authorities are responsible for enforcing health measures, the forces back of most State health legislation are the volunteer groups and private agencies. It was these groups that organized State societies for the prevention of blindness in newborn children; they all became active in preparing legislation to be enacted to prevent ophthalmia neonatorum.

The Illinois Society for Prevention of Blindness is an excellent example of this type of organization (*14*). In 1927, this society began its campaign for passage of legislation making it mandatory that a prophylaxis be instilled in the eyes of a newborn child. Audrey Hayden Gradle, executive secretary of the society, made a survey of the blind in Illinois, which showed that during the years 1921–30, in Chicago, 1,294 babies were hospitalized with ophthalmia neonatorum and 77 babies became blind as a result of this disease. Mrs. Gradle enlisted the sup-

port of many organizations: the Illinois State Medical Society, the State Board of Health, the Parent-Teacher Association, the women's clubs, Lions clubs, and the State Social Hygiene Association. Dr. William Snow of the American Social Hygiene Association assisted Mrs. Gradle by helping her organize standing committees and by making speeches throughout Illinois.

A bill for the prevention of ophthalmia neonatorum was drawn up with the assistance of the law department of Chicago University. It was fought bitterly by antimedical groups whose opposition to medical treatment was based on religious grounds and who flooded the legislature with protests. At that time, very few bills with social welfare implications survived the committee readings. (In Illinois, such bills must have three readings in both the House and the Senate committees and a favorable opinion by the attorney general before they are presented to the legislature for passage.)

An amendment to the bill, sponsored by the antimedical groups, was voted down 112 to 4. This amendment provided that if parents or guardians objected to the use of prophylaxis on grounds of religious beliefs, those persons would be exempt from the law. The original bill passed the Illinois Legislature and was sent to the Governor for his signature. The attorney general gave an adverse opinion that "police powers for the State did not cover the situation, and that individuals had certain fundamental rights which must be protected." Governor Emmerson vetoed the bill and it was sent back to the legislature.

On June 1, 1931, before the bill came up again in the legislature, the *Journal of the American Medical Association* carried a two-page editorial defending the bill. The Legislative Reference Bureau assured the Illinois Society for the Prevention of Blindness that the police power of Illinois was unlimited when loss of life and limb was concerned and that loss of eyesight ranked as equivalent to loss of life and limb. Helen Keller sent an open telegram to the legislature espousing the proposed legislation. Labor leaders wrote letters and lobbied for its passage, but the bill lost by six votes.

Mrs. Gradle did not give up the fight. She immediately began her campaign in preparation for the next session of the legislature. She went into the 51 legislative districts, organized committees in each district, made 350 speeches. She secured the support of leading obstetricians, who, at their own expense, testified before the Judiciary Committee. Mrs. Gradle kept 3,114 members of her standing committees working.

In January 1933 the bill was again introduced in the Illinois State Legislature. A new governor and a new attorney general were now in office. The bill was passed on April 18, 1933, and became effective on July 1, 1933. Under Illinois law, the enforcement of the provisions of the law became the duty of the State board of health.

A private agency such as the Illinois society has the advantage of "singleness of purpose," and acts as a catalyst. Other State societies for the prevention of blindness immediately began working on preventive legislation, emulating the courage and persistence of the workers in Illinois.

Constitutionality of Laws

The validity of the law requiring mandatory use of prophylaxis in the eyes of the newborn child and the reporting to the State health department of "inflammation of eyes" has been tested in court many times. In the case of *Medlin* v. *Bloom*, Massachusetts Supreme Court, 1918 (*15*), in an action of tort for defendant physician's negligence in caring for eyes of a newborn whereby the child becomes blind—whether defendant failed to treat the child's eyes with nitrate of silver or not after birth, and if not, whether the blindness was due to such omission as the proximate cause of the blindness—it was held to be a question for the jury to decide.

In this action the judge in the lower court instructed the jury, in substance, that "failure of the defendant to report the case ('inflamed eyes') to the State board of health as promptly as he should have done under RL 75 as amended by Statute 1905, chapter 251, section 2, was immaterial and was not to be considered as evidence of negligence." The lower court found for the defendant.

The Supreme Court of Massachusetts held that: "If you find the defendant violated the provisions of the act of 1905, that is evidence of negligence on part of the defendant." The court further held that "the evident purpose of the statute is that the board of health may be informed without delay of the existence of the most serious disease which may affect young children, so that immediate and scientific treatment may be received and blindness prevented. Such failure was evidence of neglect, and the decision of the lower court reversed and remanded."

In the case of *Dietsch* v. *Mayberry* (*16*), Ohio Appellate Court, 1942, it was held that the court is bound to take judicial notice of rules and regulations of the State board of health promulgated under statutes relating to investigation and report all cases of inflammation in the eyes of the newborn, under General Code, section 1248–1 to section 1248–5. The court held that the purpose of the statute is twofold: (*a*) to benefit the newborn by preventing blindness, and (*b*) to relieve the public from the burden of supporting another blind child.

The court held that violation of such a statute was "negligence per se." The lower court found for the defendant but the Court of Appeals reversed the decision in favor of the plaintiff. This decision was based on the element of omission by the defendant in his duties to the plaintiff—his failure to notify the State board of health of the inflamed condition of the infant's eyes. This charge of negligence of the defendant had been omitted by the judge in the lower court in his general charges to the jury on negligence of defendant. Verdict was for the plaintiff, and the case was reversed and remanded.

Treatment

Since the discovery of penicillin, which is highly effective in the treatment of ophthalmia both locally and systemically, it has been shown that local ocular penicillin has prophylactic value. The proponents of silver nitrate prophylaxis opposed its abandonment in the treatment of ophthalmia neonatorum, although they admitted that a 1-percent solution of silver nitrate does cause chemical conjunctivitis in a high percentage of cases. This condition is not serious, however, and there is no record of silver nitrate prophylaxis, properly performed, causing injury to an infant's eyes. The proponents of penicillin prophylaxis maintain that this antibiotic is equally efficacious in the prevention of ophthalmia neonatorum and has none of the objections leveled against silver nitrate.

The California State Board of Health amended its regulations pertaining to prophylaxis for ophthalmia neonatorum in June 1953 (*17*). The change provided for use of either 1 percent of silver nitrate in wax ampule or penicillin ointment. They accepted penicillin ointment as the only approved antibiotic preparation and recommended it on the basis of (*a*) data obtained from controlled clinical studies indicating its effectiveness and (*b*) ease of administration (*18*).

Summary

Ophthalmia neonatorum is a reportable disease and must be reported to the State health department in all States. In spite of the fact that the laws in all States require some prophylactic instillation in the eyes of the newborn child (which should prevent this infection), the disease still occurs. The table gives the number of cases of the disease in States which reported to the National Office of Vital Statistics in the years 1946–52. In 1952, only three States—Mississippi, Tennessee, and South Carolina—reported their ophthalmia neonatorum cases to the National Office of Vital Statistics.

Some form of prophylaxis against ophthalmia neonatorum is required by law or State board of health regulations in all States and in the District of Columbia. Thirty-three States require the use of prophylaxis for the prevention of this disease but leave the choice of prophylactic agent to the physician, the midwife, or the nurse in charge of the infant. All States require reporting of "inflamed eyes" occurring shortly after birth to the local health officer, who in turn must report the case to the State board of health.

Some States have qualified the use of prophylaxis for ophthalmia neonatorum; one State

Annual morbidity reports of ophthalmia neonatorum, by States, as reported to the National Office of Vital Statistics, 1946–52 [1]

State	1946	1947	1949	1950	1951	1952
Alabama						
Arizona	11	9	4	7	1	
Arkansas	2	5	3	4	5	
California			11	7	8	
Colorado			1		1	
Connecticut	1	1	1	2	2	
Delaware						
District of Columbia						
Florida	18	30	11	22	14	
Georgia				4	2	
Idaho						
Illinois	421		152	128	32	
Indiana	1					
Iowa						
Kansas						
Kentucky			2			
Louisiana	14	3	6	6		
Maine						
Maryland	27	11	7	3		
Massachusetts	122	308	160	167	91	
Michigan	18	12	14	23	19	
Minnesota					1	
Mississippi	32	53	36	35	34	27
Missouri	1					
Montana						
Nebraska						
New Hampshire						
New Jersey	18	6	8	6	6	
New Mexico			8	5	4	
New York	70	53	25	23	26	
North Carolina						
North Dakota						
Ohio	530	533	474	535	420	
Oklahoma	1	5	3			
Oregon			1			
Pennsylvania	17	20	24	8	8	
Rhode Island						
South Carolina	23	28	18	4	2	2
South Dakota						
Tennessee	6	3	12	13	16	7
Texas	105	96	139	75	82	
Utah						
Vermont						
Virginia						
Washington						
West Virginia		7	53	87		
Wisconsin	7	3	4	4		
Wyoming						
Total	1,445	1,186	1,177	1,168	774	36

[1] No data available for 1948.

NOTE: No reports were received from States for which no figures are given.

requires ". . . if there is any reason to suspect an infection in the eyes of the newborn, then a prophylaxis must be applied." Another State qualifies the law by not requiring treatment for a minor child if the parent is a member of a recognized denomination whose religious convictions are against medical treatment. Another State provides that ". . . any parent shall not be required to employ such a prophylaxis (as required by State statute) if objections are made in a written statement to physician or midwife in charge of the case.

The reduction of gonorrhea as a cause of blindness from 28 percent in 1908 to 1 percent in 1950 is a feat of preventive medicine of no small proportion. The continued role of gonorrhea in the production of blindness probably is attributable to errors in the method of use of prophylaxis rather than to ineffectiveness of the procedure itself.

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REFERENCES

(1) Quellmalz, G. S. T.: Centralbl. f. prakt. Augenh., February 1894. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 24.

(2) Goetz, J. G.: De ophthalmia infantum recens natorum. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 24.

(3) Gibson, B.: Edinburgh Med. and Surg. J., 1807, p. 160. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 24.

(4) Vetch: Practical treatise on diseases of the eye, 1820, p. 242. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 30.

(5) Neisser, A.: Deutsche med. Wchnschr., 1882, vol. xiii, p. 279. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 36.

(6) Hirschberg and Krouse: Centralbl. f. prakt. Augenh., 1881, vol. v, p. 39. Cited by C. C. Norris *in* Gonorrhea in women. Philadelphia, W. B. Saunders Co., 1913, p. 37.

(7) Posey, W. C.: The romance in the movement for the prevention of blindness. Sight-Saving Rev. 4: 83–93, June 1934.

(8) Credé, K. S. F.: Die Verhütung der Augenentzündung der Neugenorenen. Arch. f. Gynaek., Berlin. 18: 367–370 (1881).

(9) Kerby, C. E.: Blindness in preschool children. Sight-Saving Rev. 24: 15–29, Spring 1954.

(10) Lehrfeld, L.: Venereal disease and prevention of blindness. Sight-Saving Rev. 1: 48–54, December 1931.

(11) Kerby, C. E.: A plan for standardization of statistics of the blind. Sight-Saving Rev. 5: 4–12, March 1935.

(12) Wilmer, W. H.: Ophthalmia neonatorum. Proceedings of the Eleventh Annual Conference of the Health Officers and Boards of Health of Maryland, Baltimore, May 10, 11, 1929. Bulletin of the Maryland State Department of Health, vol. 2, No. 1, 1929. *Also in* Collected Reprints from the Wilmer Ophthalmological Institute of the Johns Hopkins University and Hospital, vol. 1, 1925–29, Baltimore, Johns Hopkins University Press.

(13) Ophthalmia neonatorum campaign in Pennsylvania. Sight-Saving Rev. 1: 57, June 1931.

(14) Hayden, A. M.: Prevention of blindness in Illinois. Sight-Saving Rev. 1: 28–37, December 1931.

(15) Medlin v. Bloom. Northeastern Reporter. 119: 773–775 (1918).

(16) Dietsch v. Mayberry [May 12, 1942]. Northeastern Reporter (2d series) 47: 404–410 (1947).

(17) California State Department of Public Health: Memorandum on use of penicillin ointment for the prevention of ophthalmia neonatorum. San Francisco, The Department, December 3, 1953. Mimeographed.

(18) Davidson, H. H., Hill, J. H., and Eastman, N. J.: Penicillin in the prophylaxis of ophthalmia neonatorum. J. A. M. A. 145: 1052, April 7, 1951.

The Salk Vaccine

The development and successful trial of the Salk vaccine against paralytic poliomyelitis is a major step toward control of a crippling disease. It represents the culmination of a truly historic medical and public health achievement.

This development of a successful vaccine places a great responsibility on the physicians, the public health agencies, and the parents in our Nation. I am confident that physicians and health officials will conscientiously conserve and put to best use the supply of vaccine. Parents should cooperate with them. As the supply increases, there will be enough for all who wish to be immunized.

Within our time, therefore, we can expect to see effective control of crippling polio. I offer my sincere congratulations to all who have contributed to this grea. effort to protect future generations from the specter of poliomyelitis.

—LEONARD A. SCHEELE, Surgeon General,
Public Health Service, April 12, 1955.

Poliomyelitis Vaccination

The achievement of the new poliomyelitis vaccine is truly a great story deserving the full play it has received in the newspapers. It is one of the great public health events of the mid-century. It represents a triumph of basic research and an amazing example of effective teamwork.

The details of the evaluation of the 1954 field trial of the Salk vaccine, reported at the University of Michigan, April 12, have been adequately covered by the press. So I thought it would be more interesting to trace some of the scientific problems that had to be solved in the course of achieving a poliomyelitis vaccine and to attempt to outline some of the future developments and problems.

Until quite recently no coherent theory of the disease was established. The scientific basis for an effective means of immunization or control did not exist. Many facts were known, but they were separate pieces of a jigsaw puzzle that did not seem to fit together. For example, early epidemiological studies 50 years ago led to the inference that there were 100 persons infected for each one paralysed, but it was not until 1940 and later that this thesis was proved in the laboratory. The age distribution of cases, resembling that of measles, led to the inference that immunity followed an attack, but there were disconcerting numbers of bona fide instances of double attacks of the paralytic form of the disease. This cast doubt on the immunity mechanism.

Presented is a summary of Dr. Alexander D. Langmuir's informal remarks before the meeting of the Departmental Council of the Department of Health, Education, and Welfare, April 14, 1955. Dr. Langmuir is chief of the Epidemiology Branch, Communicable Disease Center, Public Health Service.

For many years it was believed that the virus had a peculiar predilection for nerve tissues. This belief led to the study of nasal sprays in an attempt to "block" the supposed pathway to the brain along the olfactory nerve. The treatment caused a lot of people temporarily to lose their sense of smell but did not prevent poliomyelitis.

Careful search for the virus in the blood failed to reveal its presence there with sufficient consistency to support the conclusion that blood was the mechanism for transfer of the virus to the brain.

In the laboratory for more than 30 years, the only animal susceptible to the infection was the monkey. In 1939, Dr. Charles A. Armstrong of the Public Health Service announced the isolation of the Lansing strain in mice, but this culture turned out to have so many peculiarities that some persons doubted for a time that it was truly a poliomyelitis virus. Tests for immunity to poliomyelitis viruses were very difficult, expensive, and often so inconsistent as to result in continued confusion.

In the field, epidemiological studies also left many points uncertain. The isolation of the virus from feces led many workers to think of the disease as comparable to typhoid. Later, the discovery of the virus in flies led to extensive attempts to control epidemics with DDT. The exact route of infection from one person to another remains in doubt, but increasing evidence points to the similarity of this infection to the other classical contagious diseases such as measles, chickenpox, and mumps.

In the solution of these problems, certain major "breaks" in the form of new discoveries and contributions to basic knowledge deserve special mention.

In 1948, Drs. Howard A. Howe, David Bodian, and Isabel M. Morgan, at Johns Hopkins University, were able to define the immu-

nity mechanisms in poliomyelitis by using large numbers of monkeys almost to the degree that other laboratories might use mice or guinea pigs. The availability of such numbers of monkeys was, of course, one of the brilliant contributions of the National Foundation for Infantile Paralysis. It was shown that three distinct types of poliomyelitis existed, each separate from the other. One of these types was the Lansing strain isolated by Dr. Armstrong. The existence of these three types adequately accounted for the occurrence of double attacks of the disease. A comparable experience is that one can catch German measles independently of true measles. The discovery of the three types of poliomyelitis and the existence of an immune mechanism similar to other diseases strongly suggested the possibility of a vaccine and indicated that all three types of virus would have to be included in it.

In 1949, Dr. John Enders at Harvard University announced the cultivation of the poliomyelitis virus in human tissue cultures. Later it was possible to grow the viruses abundantly in monkey tissues. This discovery made possible the production of the large quantities of virus, free of undesirable brain tissue, that would be necessary for a national supply of vaccine.

In 1951, when many workers were still thinking of poliomyelitis as primarily a disease of nerve tissues, Dr. David Bodian at Johns Hopkins and Dr. Dorothy M. Horstmann at Yale University simultaneously announced the discovery of the virus in the blood stream of monkeys and later of man. The key to this fundamental discovery was looking for the virus at the right time, namely, before symptoms developed rather than after the disease was in full swing. This discovery further gave promise of the probable effectiveness of a poliomyelitis vaccine because immunity in the blood would eliminate virus and probably prevent it reaching the nervous system.

In 1952, Dr. William Hammon at the University of Pittsburgh reported his successful studies of gamma globulin. These further supported the concept that a vaccine would be successful.

Thus, only in the last 3 to 4 years has a coherent theory of the disease been developed and have the technological tools become available to permit in humans large-scale tests of vaccination against poliomyelitis.

In developing the actual vaccine, Dr. Jonas E. Salk of the University of Pittsburgh has been the extremely able executor of all this basic scientific development over many years in many laboratories. As he most aptly stated recently, "Dr. Enders threw a forward pass and I happened to catch it." He is an accomplished runner.

The Public Health Service is proud to have had the opportunity of participating in the vaccine evaluation by assigning Epidemic Intelligence Service officers to Dr. Thomas Francis' laboratory and to the collaborating States and research laboratories. They have been some of the soldiers on the team—doing much of the legwork in collecting basic records and specimens. They have contributed considerably to the accuracy and completeness of the data and thereby to the confidence in the conclusions that have been reported.

The Biologics Control Laboratory of the National Microbiological Institute, National Institutes of Health, worked closely with Dr. Salk and the participating pharmaceutical houses in developing standards for the vaccine. This laboratory, along with the NIH Rocky Mountain Laboratory at Hamilton, Mont., and the Virus Laboratory of the Communicable Disease Center, located in Montgomery, Ala., also participated in the vaccine evaluation.

I expect widespread acceptance of the vaccine this year. A rapid decline in the disease can be looked for. As yet it cannot be concluded whether the virus will disappear from the Nation or whether the infection will continue to spread among the population without causing paralysis in immune persons. If the infection progressively disappears, as I believe it will, then it will be necessary to immunize only a substantial number but not all susceptible persons in the population. If the virus continues to spread, then it will be necessary to exert particular effort to immunize 100 percent of the population, including adults. In either event, the supply of vaccine should become sufficient and the essential elimination of the paralytic form of the disease can be predicted with assurance.

Medical Librarianship

By ESTELLE BRODMAN, Ph.D.

JUST as there were nurses long before the profession of nursing came into formal being, so there were medical librarians before there was a profession of medical librarianship. As late as 1853, a meeting of American librarians in Philadelphia was attended not by librarians as such, but by clergymen, educators, some lawyers, and a few physicians, all of whom acted as librarians as well. Indeed, it might be said that librarianship as a profession did not begin to take shape until after the American Civil War, and medical librarianship, as differentiated from general librarianship, not until about the turn of the 20th century. Even then, when the Medical Library Association was founded, there were more physicians acting as librarians than there were professional librarians.

Today, medical libraries and medical librarians serve public health workers daily all over the country, especially by bringing them up-to-date information on the professional problems with which they are faced and by showing them how others have solved similar problems. Since medical libraries are one of the modern tools of the public health worker, a knowledge of their development and present status should be of interest.

In order to understand the late development of medical librarianship, it is necessary to consider the conditions prevailing before the mid-19th century. For a profession to develop, there must be a large body of information available, a need for specialized techniques in handling the information, and a substantial number of people who need the information but do not have the time or inclination or ability for acquiring the specialized techniques.

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Growth of Medical Literature

The first requirement for the development of medical librarianship was the existence of a large body of medical information. Medical literature has been accumulating for many centuries. Perhaps the earliest nonmagical medical works that have come down to us are the Egyptian papyri, the Papyrus Ebers and the Papyrus Edwin Smith, named after their modern discoverers but actually written about the 16th century B. C. from even earlier texts. The Papyrus Ebers is a medical treatise and the Papyrus Edwin Smith a surgical work (*1*), but both give such clear and accurate clinical descriptions as to leave no doubt of the high state of medicine at that time.

These papyri are not isolated examples of medical writings. There are copies of Indian medical works from the 7th to the 5th centuries B. C., the Susruta, the Atreya, and the Vagbhata, the first of which can be compared to the Papyrus Edwin Smith for its surgical cases and to modern works for scientific reasoning about such things as the relationship of mosquitoes to malaria and dead rats to plague.

Chinese medicine also produced literature of a fairly high order somewhere between the 3d and 10th centuries B. C., and the writings of such Greek and Roman physicians as Hippocrates, Galen, and Celsus are known to all who have contact with medicine. Even during the so-called dark ages of Europe, medical literature was prepared, laboriously copied by hand, and circulated to interested persons, as shown by the books which we possess from that period: the writings of Constantinus Africanus, Roger of Palermo, Roland of Parma, Henri de Mondeville, and Guy de Chauliac, and the Regimen Sanitatis Salernitanum, among others.

Indexes to Medical Literature

With the invention of the printing press in the mid-15th century, the ability to reproduce books cheaply in large quantities led to an increase in the available literature in all fields, including medicine. It is a truism that physicians read medical literature primarily to learn what others have done in similar situations; it follows from this that the physician must be able to learn of the existence of writings bearing on his problem. As the printing press increased the medical works available to him, the physician found it increasingly difficult to learn about the existence of pertinent published information and to acquire it when aware of it.

As early as 1506, a new form of medical writing appeared, the list or bibliography of previous publications (*2*), to which the physician could refer when he wished to learn what had been written on a particular subject or by a particular person. The earliest printed medical bibliography, the De Medicine Claris Scriptoribus of Symphorien Champier, was followed by numerous other such lists, growing in size as the literature grew, and splitting into subdivisions by subject or by period of time, as the growing bulk of medical writings demanded.

Further intensifying the growth of medical literature was the emergence of the magazine or journal, which contained a number of contributions in each issue and which was meant to be continued indefinitely. The first medical magazine (periodical) was probably the *Acta medica* published in Copenhagen in the 17th century by the great Danish anatomist and physician, Thomas Bartholin. The first medical journal printed in the vernacular was probably Nicolas de Blegny's *Nouvelles découvertes sur toutes les parties de la médecine*, begun in Paris in 1679. From these and from the pages of the transactions of the many learned societies which included medicine among the other sciences came such an increase in the literature that readers were swamped. It is estimated that today approximately 7,000 to 8,000 medical serials are published throughout the world.

The amount of medical literature available caused Wilhelm Gottfried Ploucquet, the German medicolegal expert and bibliographer, to complain bitterly of excess as early as 1808. "The job would be simpler," he said, "if the legacy were smaller, but the wealth of material overwhelms us, and we are blinded by too much light . . . To make matters worse, no day passes but someone throws another article on this mountain of material . . . Our life is too short, and there are so many books; money is so scarce, and there is so little time."

Specialized Techniques

The output of literature during the last few years of the 18th century began to be overwhelming, and the acceleration caused by the scientific discoveries of the mid- and late-19th century made a new approach to the problem imperative. In the 1860's, under the prodding of Joseph Henry, the first secretary of the Smithsonian Institution in Washington, D. C., the Royal Society of London began the collection and indexing of scientific literature, using groups of workers who were guided by a special committee of the society's members. The Royal Society Catalogue may be said to be the first large-scale joint venture into cooperative bibliography, and was a realistic attempt to meet a changed situation by adopting new methods to solve the problem. It has become the prototype of most of the bibliographic work done in the sciences since then. The most famous medical examples of this method are, of course, the *Index-Catalogue of the Library of the Surgeon-General's Office*, the *Quarterly Cumulative Index Medicus*, and the *Current List of Medical Literature*. Science bibliographers are now attempting to find still another

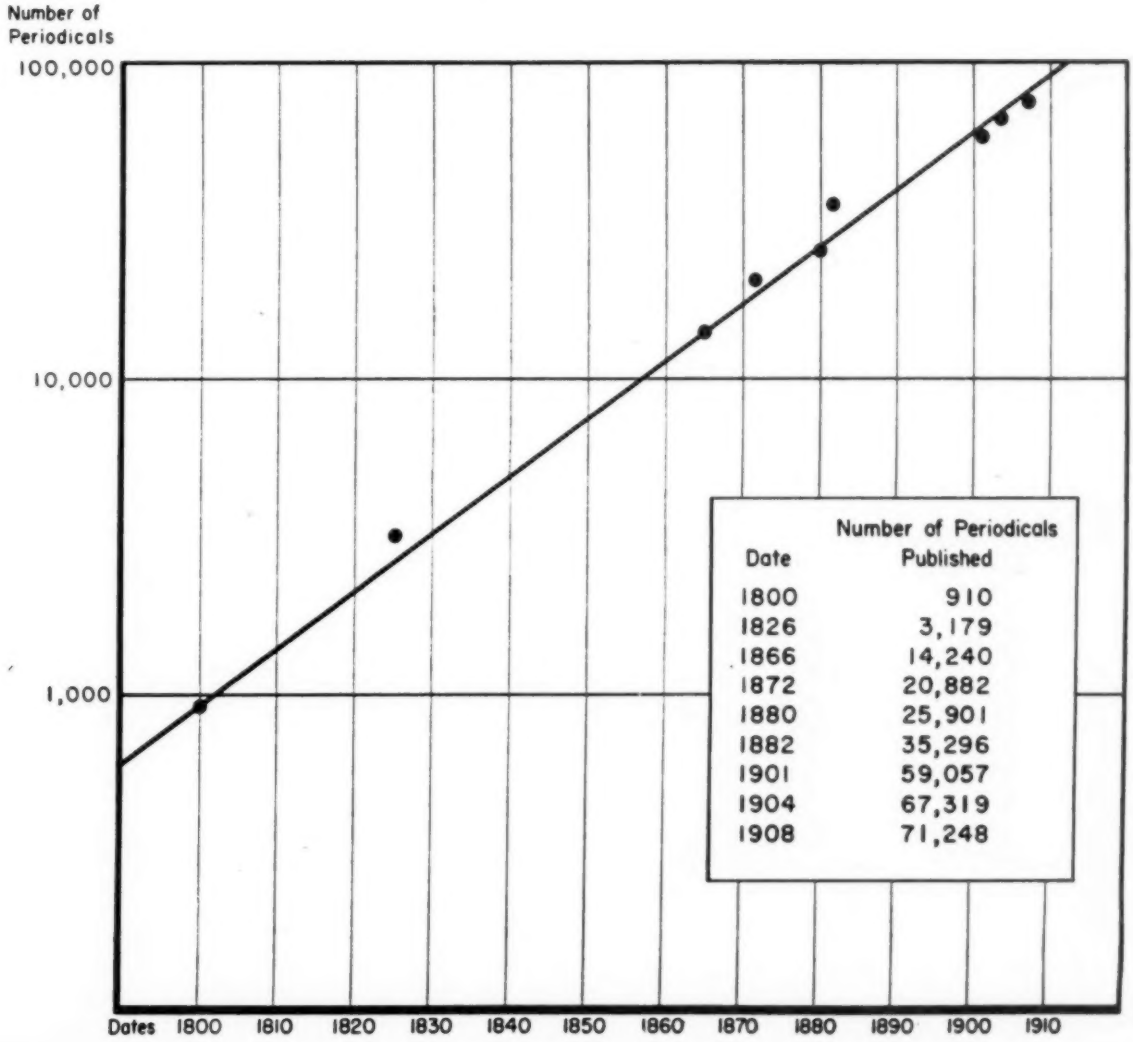
solution to the problem by the use of machines and newly developed storage devices.

This method of indexing the literature—bringing together a number of people to work jointly on a body of data—provided the second prerequisite for the growth of medical librarianship, specialized techniques. By the third quarter of the 19th century, medical literature had grown to such proportions that specialized techniques for handling it had to be devised. These techniques, in turn, required so much time to master and practice that physicians were unable to continue their previous work in the field. In addition, the amount of literature, which had made it more and more difficult for the private practitioner to afford to acquire or house a medical library, had caused the proliferation of "public" medical libraries. Thus, the profession of medical librarianship began to come into being in the 1880's and 1890's and was so strong by 1898 that a Medical Library Association could be founded in that year.

Education for Medical Librarians

The development of medical libraries paralleled that of libraries in other fields. The American Library Association was founded in 1876, and the first school of librarianship started in 1887 at Columbia University in New York City. Eleven years later there were enough people engaged in the field of medical libraries to

Growth of periodical literature, 1800–1908.



make possible the organization of an association of medical librarians, and soon thereafter education for medical librarianship was discussed.

As the number of people engaged in library work grew, apprentice classes were held in large libraries and theoretical courses were given in colleges and universities to provide specialized education for librarians. Within these schools, a trend toward more courses, more hours of attendance, and more theoretical discussions gradually appeared. This trend was aided by the depression of the 1930's; since it was difficult to obtain jobs, more people were willing to lengthen their stay in school.

In the late 1920's and early 1930's, it began to be realized that not every kind of librarianship was exactly the same as every other kind. At first this led to library school classes based upon the group served by the library—college and university libraries, public libraries, or children's libraries. Later, the subject material handled became the criterion, and from a somewhat undifferentiated course on special libraries there sprang up courses on law librarianship, music librarianship, and medical librarianship. That this fractionation is likely to continue is shown by the fact that the Joint Committee on Library Education, set up by various American library associations, is investigating possible curriculums in still other portions of library work, such as journalism. On the other hand, a feeling has also arisen that there is indeed a core of study to which it would be well for all librarians to be exposed. In the late 1940's, many library schools in America revised their courses (and at the same time their scheme of degrees) to include the same core curriculum for all students. In the present setup, medical librarianship continues to be taught as an adjunct to the core curriculum.

Formal courses in medical librarianship began in the United States in 1937 and have continued to this time, thanks in part to the fact that this country was not disrupted by World War II as soon or as deeply as European countries. There have also been several attempts at education for medical librarians in other countries (*3*,*4*).

Since training in medical librarianship is a universal problem, the United Nations, through its specialized agencies, the United Nations Educational, Scientific and Cultural Organization and the World Health Organization, has concerned itself with it. Workshops and courses for European medical librarians have been held or planned; traveling fellowships have been arranged to enable medical librarians from economically backward countries to visit medical libraries in other places; and the World Health Organization in the 1950's appointed the former head of its own library to visit medical libraries throughout Europe and give suggestions and whatever other aid was needed.

Medical Library Services

Since the training of medical librarians is based on the services they are expected to provide, it is profitable to consider what medical libraries offer. Public health workers are recipients of all these services. The most important part of any medical library is its collection; with a well-chosen stock of books, journals, and bibliographical indexes, the library will be of use to anyone truly seeking its information. The selection of materials is, therefore, a primary concern of the medical librarian, and the smaller the budget the more carefully must the selection be made. Once the collection has been brought together, the next step is preparing it for use by such devices as catalogs, classification systems, book markings, proper shelving, and the like. And, finally, the medical librarian helps the user through his knowledge of what is in his own collection and through his ability to obtain other material from outside collections. Occasionally, the librarian will make abstracts, reviews, or bibliographies for readers, though this is not common practice, and sometimes he will arrange for translations.

To prepare to perform these services, the medical librarian is ordinarily trained academically in colleges and schools of librarianship and by on-the-job internships. At present, there are more than 35 schools of librarianship in the United States which require a college degree for entrance. Students expecting to work in medical libraries usually present some academic scientific background before entering library school, though unfortunately not as many have this training as are needed. An-

other prerequisite for good work in a medical library is a knowledge of foreign languages, for, although it may be true that at present a large portion of medical research is reported in English, there is still a sizable amount in other languages. And the past literature, on which the present is based, contains perhaps 80 to 90 percent foreign material. The more German, French, Italian, or Russian a medical librarian can understand, therefore, the more valuable he will be.

The Medical Library Association has set up a voluntary certification program for medical librarians, which calls for college and library school training, with a special course in medical bibliography and librarianship, a course now given at three universities in the United States—at Columbia University in New York City, at Emory University in Emory University, Ga., and at the University of Southern California in Los Angeles. Scholarships are provided by the association to aid people taking these courses.

Present Status

Salaries offered medical librarians today generally start at around $3,000 a year and tend to go up to about $6,000, though heads of large medical libraries may receive as much as $9,000–$12,000. Since many medical libraries are connected with teaching institutions, the working conditions, vacations, pensions, and privileges tend to approach university standards. Normally about 60 new medical librarians can be absorbed each year, but the annual production of these specialized workers ranges around 30 a year. As a result, many nonspecialized librarians find their way into medical library work.

The number of medical libraries now in existence in the United States is not definitely known, but some 600 are members of the Medical Library Association, a professional organization international in scope but predominantly American in character. These include libraries in hospitals, medical schools, medical societies, nursing and dental schools, pharmaceutical libraries, psychiatric libraries, and at least eight libraries in departments of health. For membership in the association, a library must maintain a collection of 1,000 or more medical and allied books of which at least 500 must have been published in the preceding 10 years; receive regularly a minimum of 25 journal titles appropriate to the institution; and have regular hours of opening and a regular attendant in charge.

The American Medical Association (*5*) and the American College of Surgeons (*6*) have also promulgated standards for libraries in the field of medicine; and the American Dental Association (*7*) and the National League of Nursing Education (*8*), for libraries in their fields, especially in hospitals approved by them for the training of interns and residents. The American Medical Association, the American College of Surgeons (*9*), the National League of Nursing Education (*10*, *11*), and the Veterans Administration (*12*) have even gone so far as to publish lists of books and journals useful to such libraries, and the American College of Surgeons has even included hints on the administration of the collection (*13*). In the military field, the Office of the Surgeon General, United States Army, has long had a board for the review of medical books and journals, and it regularly publishes lists of officially "approved" books (*14*).

Although many guides and minimum standards have been established, the actual state of medical libraries in the United States varies enormously. Collections range from a few hundred out-of-date volumes and broken runs of journals to such mammoth libraries as the Armed Forces Medical Library, with its stock of close to 1 million titles, its receipt of over 4,000 periodicals, and its staff of over 200 people. The large majority of American medical libraries contain between 20,000 and 40,000 volumes, receive about 200 magazines regularly, spend approximately $800 annually for other purchases, and have one or two professional librarians and a clerical worker on their staffs.

Future of Medical Librarianship

The major problems of medical librarianship today are these: (*a*) how to acquire, store, and make available the constantly enlarging body of literature being produced; (*b*) how to recruit and keep librarians trained in sciences,

languages, and librarianship at the salaries now offered, and (*c*) how to bring the information in the medical libraries to the attention of persons in communities away from the main medical centers. The first problem is being attacked vigorously on several fronts by a number of workers using the techniques of engineering, electronics, photography, and librarianship (*15*), so far with only a modicum of success. "Package libraries" of the American Medical Association and the American College of Surgeons, the photo-duplication service of the Armed Forces Medical Library, and the extension services of State and medical school libraries have been attempts to solve the last problem. The matter of recruiting for medical librarianship, however, still remains a crucial one.

Summary

The medical library profession is a young one, and, as a young profession, it is dynamic and flexible in outlook and methods. Variations are still to be encountered in all phases of its work as the needs of the institution of which the library is a part dictate and as its users demand. At the same time it is a profession proudly descended from another of ancient and honorable lineage. Like medicine itself, it exists to serve; as such it demands of its adherents the questing mind and the willing heart. In return it gives them a modicum of wealth, some personal respect, and the sure knowledge of a socially useful life.

REFERENCES

(*1*) Breasted, J. H.: The Edwin Smith surgical papyrus. Chicago, University of Chicago Press, 1930.

(*2*) Brodman, E.: The development of medical bibliography. Baltimore, Medical Library Association, 1954.

(*3*) Federation Internationale de Documentation: Rapport sur l'activite du Secretariat General de la Commission Mixte de l'Enseignement et du Statut Professionels Archivistes, Bibliothecaries, Conservateurs de Collections, Documentaiistes; Annee 1953–1954. 24 Juillet 1954, 8 pp. Mimeographed.

(*4*) First International Congress on Medical Librarianship, London, 1953. Transactions. *In* Libri, vol. 3, 1953.

(*5*) American Medical Association. Council on Medican Education and Hospitals: Hospital medical library suggestions. Chicago, The Association, 1954, 18 pp.

(*6*) American College of Surgeons: Manual of hospital standardization. Chicago, American College of Surgeons, 1946, p. 72–73.

(*7*) American Dental Association. Council on Dental Education: The dental library. J. Am. Coll. Dent. 12: 202 (1945).

(*8*) National League of Nursing Education. Education Committee on Standards: Essentials of a good school of nursing. New York, The League, 1952, p. 55–57.

(*9*) American College of Surgeons. Department of Literary Research: The hospital medical library. Chicago, American College of Surgeons, 1946, p. 72–73.

(*10*) National League of Nursing Education. Committee on the Nursing School Library: Manual for the nursing school library. New York, The League, 1947.

(*11*) National League of Nursing Education. Committee on the Nursing School Library: Guide for the development of libraries in schools of nursing. New York, The League, 1952.

(*12*) U. S. Veterans Administration. Special Services. Library Services: Basic list of medical books and journals for VA hospitals, centers, and domiciliaries. Revised. Washington, D. C., U. S. Veterans Administration, 1952, 22 pp.

(*13*) Prime, L. M.: The hospital library and its administration. Bull. Med. Lib. A. 28: 81–90 (1939/40).

(*14*) U. S. Army. Office of the Surgeon General: Books [and journals] having approval of SGO Board for Review of Medical Professional Books and Periodicals. Washington, U. S. Army, 1952. Supp.

(*15*) Ridenour, L. N., and others: Bibliography in an age of science. Urbana, University of Illinois Press, 1951.

Case History of a Mental Health Clinic

By ALICE H. COLLINS

IN MASSACHUSETTS, the Mental Health Clinic Association of Holyoke, Chicopee and Northampton Area, Inc., came into being in 1953 because, here as elsewhere, World War II brought about a greater familiarity with psychiatric concepts and an increasing understanding of the cost to the community of the problems arising from neglected emotional disorders.

In the long period of preparation—more than 20 years—the concept of psychiatric social service for the tri-city area evolved from that of a small treatment unit, originally planned for Holyoke, to the nucleus of a mental health center serving a highly industrialized area of 160,000 and having infinite possibilities of further expansion.

The concept of areawide service was realized through the leadership of the Junior League in Holyoke and with the cooperation of the Massachusetts State Department of Mental Health as well as many local professional and community leaders. Careful surveys of existing needs before the project became a set plan and a realistic approach to financing eventually demonstrated the values of an area plan of high professional standards.

Mrs. Collins is the head psychiatric social worker of the area mental health clinic described in this account. The clinic, a joint undertaking of the Massachusetts State Department of Mental Health and of the Mental Health Clinic Association of Holyoke, Chicopee and Northampton Area, Inc., is located at 326 Appleton Street, Holyoke, Mass.

The story behind the establishment of our mental health clinic is one of long delays, disappointments, and modifications in various plans to bring the final project to a useful life.

Over a Long Period

In 1930, a group of young women in Holyoke formed a Junior Service Corps with a view to qualifying for membership in the Association of Junior Leagues of America, an organization with a nationwide reputation for volunteer service and for financial underwriting of worthy community projects. The qualification finally took place in 1940.

The junior corps chose among its first projects in 1931 to support a traveling child guidance clinic which was maintained by the nearby State mental hospital and which was about to terminate its service because of lack of funds.

The young league continued its support of the clinic until 1942, when the demands of World War II on psychiatric personnel caused a deterioration in the clinic's service to the point where it seemed wise to end its sponsorship.

During the 10-year period of sponsoring the child guidance clinic, the league gained an understanding of psychiatric and allied fields and acquired a first-hand knowledge of the problems faced by mental health services.

Experience had proved that child guidance clinics, while extremely useful, could treat only a limited few, partly for the familiar reasons of lack of qualified personnel and inadequate financing, but also because such treatment had no hope of success unless other elements in the

child's life were also contributing positively to his better adjustment.

The Junior League again had first-hand contact with the field of mental health in 1948, when it was proposed that the group provide funds for psychiatric social work in a day care center. Such service, it was thought, could accomplish much for the children and their parents and might be extended to other local day care centers.

Investigation indicated, however, that the financial burden of the proposed project would be too heavy and that the community had more need for consolidation of services than for expansion of services. So the search continued for some feasible method of supplying psychiatric services in Holyoke.

In the winter of 1949–50, the league investigated possible new projects for which its children's fund could be used. Among the possibilities suggested was that of a mental health clinic for children, to be established in the local schools, and to be financed with State and local school funds. It was proposed that the league lay the foundation for getting the clinic under way and perhaps supply it with some financial and volunteer assistance when it was established. But it soon became clear that this project would require far more than league sponsorship.

In investigating the community's resources during this period, contact was made with the community organization expert of the Massachusetts State Department of Mental Health. His interest was to be of enduring usefulness since he not only met with the league members who were searching out possible projects, but he remained in constant touch with the group and was invaluable in encouraging and finally bringing the developing clinic to a successful culmination.

Together, the professional organization expert, the superintendent and assistant superintendent of the Holyoke schools, and the executive secretary of the Holyoke Community Council formed a small planning committee.

In line with the State mental health department's philosophy that "each community health program should serve an area with a population between 100,000 and 200,000," it was proposed that the plan for the mental health clinic be extended beyond Holyoke to include Chicopee, Easthampton, Northampton, and South Hadley, Mass.

The Holyoke group was willing to accept this expansion of its original concept and to modify its plans from those of a local center to an area center. Representatives of the proposed area were invited to subsequent meetings of the planning committee. The pressing need for a clinic was voiced by all members of this new steering committee, which by now represented the fields of medicine, education, and social welfare.

Further exploration into the need for the clinic was then undertaken. Questionnaires were sent to physicians, schools, children's agencies, veterans groups, departments of public welfare, boards of health, and nursing associations. The replies pointed up the need for inservice training courses for professional personnel and for high quality in diagnosis and treatment.

Believing it worth while to explore the area's need even still more carefully, the steering committee met with top educators and local medical societies. Members of public and private social agencies, the city solicitor, and representatives of the probation department, women's clubs, and the clergy were present at one large meeting. Other meetings sought, in order to reach such groups as industry and the courts and labor organizations, to study the legal and economic aspects of the proposed mental health service. Various individuals brought to the meetings their point of view of the need and value to the community of enlightened psychiatric services.

A Major Setback

After these numerous meetings, formal application was made for Federal grant-in-aid. Unfortunately, owing to the demands of the Korean action, the application was not acted upon favorably, but encouragement was held out for the future.

It is evidence of the strength of the structure erected by the steering committee that this setback in its carefully documented plan did not cause it to disintegrate or to turn to other, less

frustrating projects. It is evidence, too, of the wisdom of bringing into the planning representatives of many fields whose practical needs now encouraged the league to sustain its interest in spite of the serious reverse.

The Holyoke Junior League showed some interest in reverting to the original plan of providing a service for Holyoke alone, and there was some exploration of the possibility of organizing a small clinic as part of the Holyoke Hospital's outpatient service. But these suggestions only served to strengthen the conclusion that a clinic must spread its influence into the community and that there was need among the community's professional workers for psychiatric consultation. It was believed that a very small clinic with its necessarily limited caseload would not have enough effect on the community if the only contact of the staff with the community were a direct one with the patients.

In the year 1951–52, when the prospects for the original plan to establish mental health services for Holyoke seemed to be even more obscure than ever, much progress was actually being made.

It might even be postulated that the long period of preparation for the clinic and the unwavering interest in realization of the project, in spite of the many setbacks, were major factors in assuring ultimate success.

Increasingly, the continuing members of the steering committee, meeting informally, came to see their project in much the same light as the whole problem of mental health service was being appraised nationally—not as the establishment of a treatment clinic alone, but as a focus for mental health activity through an entire area.

They began to think in terms not only of providing psychiatric outpatient care for the many individuals in the community who were in need of such help but of a long-range and fluid program for improving the mental health of the whole area.

Help From the State

The State department of mental health, in making its survey of the services then available in the State in order to determine the direction of its own future growth, based its thinking on a philosophy of prevention of mental ills. In planning for new clinical facilities, the department considered as a prime requisite the readiness of the community to accept such concepts.

The department expressed the philosophy of its mental health program in the *Mental Health News Letter* of the Massachusetts Association for Mental Health (June-July 1953):

"The State will join with any responsible and representative community group to work towards bringing to the community a mental health and psychiatric clinic program. By responsible we mean that the community group must be dedicated to the continuing job of mental health promotion in the community. It must be able to provide funds on an annual basis from an annual drive, community chest, or other sources. It must be able to write checks, employ personnel, and provide quarters, equipment, and supplies. It has to take a very active part in mental health education, interpreting the function of the mental health program to the community. Furthermore, it must interpret community needs to the professional staff and help it in formulating policies concerning the overall operation of the mental health program."

The department of mental health recognized that although the steering committee had no formal organization it met the requirement of being a responsible and representative group. Consequently, when its survey corroborated the need for psychiatric services in the Holyoke area, the department chose to place a new community clinic there.

Notice came to the steering committee in September 1952 that funds would be immediately available from the department for the establishment of professional psychiatric services.

The committee called a number of meetings to form an association which would assist the State department of mental health by providing clinic space, secretarial service, and maintenance funds. The department made it clear that it would cooperate, as closely as consistent with good professional practice, in carrying out the policies of the association as they represented community needs.

All of the areas that had shown an interest in the formation of the original clinic were now organized under the name of the Mental Health Association of Holyoke, Chicopee and Northampton Area, Inc. A constitution and bylaws were adopted; a board of directors and officers were elected; and application for incorporation was made.

An advisory committee, representative of all the communities and of medicine, education, nursing, social welfare, and the clergy, was formed. One of its early functions was the determination of admission and fee policies. Later, it made known to the clinic some of the problems of local physicians and attempted to find some solutions. This committee has continued to meet, advising on community needs and attitudes.

One of the first responsibilities faced by the board of directors was the raising of funds to cover rent and secretarial and general office expense, and to purchase office equipment. The estimated association budget for the first 18 months of operation was $10,000; professional salaries were met by the State.

With these funds in hand, it was possible to secure sufficient personnel to provide some professional service by November 15, 1952. The clinic opened as a community health service on February 8, 1953. Treatment was offered for children and their families; consultation was available to physicians and other professional groups in the area; and a program of mental health education was begun.

From the start, the clinic was open 5 days a week, 8½ hours a day, from 8:45 a. m. to 5:15 p. m. The staff consisted of a full-time psychiatrist, a psychologist, a psychiatric social worker, and a secretary.

In July 1954, when a need for the expansion of services was already being demonstrated, the association asked the State department of mental health for more staff. At the same time, it agreed to provide the additional office space and secretarial help. The department was able to provide a clinical psychologist for the newly created departmental position of mental health consultant. His main function was to work with the schools of the area. When it appeared that the department could not provide the part-time social worker the association had also requested, the association itself took on this responsibility.

At first, housing the clinic was a serious problem, for the clinic operated in rooms donated by the school department, in the beginning in the basement of a school, then in the empty classrooms of an abandoned schoolhouse. Rooms were eventually found in a centrally located office building, and additional space was leased as the clinic's needs increased. In its present location, the clinic is accessible to the whole area it serves; it is no more than a half hour away from any part of the communities.

Each participating community was given an estimate of its share in the budget, arrived at through a rough estimate of population, and was asked to raise the amount in its own way. Care was taken that the association representatives in the communities thoroughly understood the clinic functions, and in the consequent appeal letters and newspaper stories used for money-raising purposes the interpretation of the clinic's work was emphasized.

The success of the funds-raising project varied in the communities although the sum needed was collected. In attempting an informal analysis of reasons for this variation, some felt that one difficulty arose because the incorporation of the clinic was not completed before the drive began. If this had been foreseen, the incorporation papers could have been obtained in an earlier planning phase.

The Clinic in Operation

The present staff consists of a full-time psychiatrist, who is the director of the clinic, a psychologist, the mental health consultant, a full-time head psychiatric social worker, a part-time social worker, and two secretaries, one full-time and one part-time. It is believed that this staff will serve to meet the clinic's needs for the next few years and that the same pattern of a joint undertaking between the association and the department of mental health will continue to apply when further expansion becomes necessary. The present annual budget of the association is $9,950, and that of the State department of mental health is $19,900.

No exact formula for dividing the financial responsibility is in existence, nor is this envisaged. Rather, the concept of responsibility is one of joint planning and participation within the capabilities of the State group and the local group.

The communities plan to raise their share of the association funds through the community chest or as part of the school budget and public health funds. There is still some individual solicitation, but it is planned to have this kept at a minimum in the future with the stress on community support of a community agency whose presence is of value both directly and indirectly. Plans are being worked out for social agencies to pay for the consultant services available, and some are already doing so on a retainer rather than on an hourly fee basis.

The clinic accepts for treatment children between the ages of 2 and 18. While no formal statement is made as to eligibility, it is understood by the staff that there must be some selection of cases in order to function at all adequately. Therefore, the emphasis in selection is on the type of emotional disturbance which can be expected to improve with intensive (weekly) treatment over 6 months to 1 year.

Since the philosophy of the clinic is based on the premise that part of clinical responsibility lies in the field of prevention, consultation work is done regularly or on a request basis with teachers, social agency personnel, the courts, and the clergy.

The acceptance and widening use of the consultation service would indicate that this is an additional service toward meeting the demands of the community and helping those who work with children to understand them better and to improve the mental health climate for all children in the entire area.

PHS films

The Dug Well—Sanitary Aspects

35 mm. filmstrip, sound, color, 10 minutes, 72 frames. 1954.

Audience: Sanitary engineers, sanitarians, public health inspectors, and others interested in water supplies.

Available: Loan—Public Health Service, Communicable Disease Center, 50 7th St., NE., Atlanta 5, Ga. Purchase—United World Films, Inc., 1445 Park Ave., New York 29, N. Y.

Public health aspects of dug wells are portrayed in this filmstrip. Emphasis is placed on site selection for a well and on construction principles, methods, and materials to be used to best advantage for the location. Types of pumps are demonstrated and the proper installation of each explained. Water sampling and disinfecting techniques are included in the study.

Pit privy is source of pollution to dug well.

A Large Water Treatment Plant

35 mm. filmstrip, sound, color, 12 minutes, 84 frames. 1954.

Audience: Sanitarians, sanitary engineers and trainees, and others interested in modern water treatment plants.

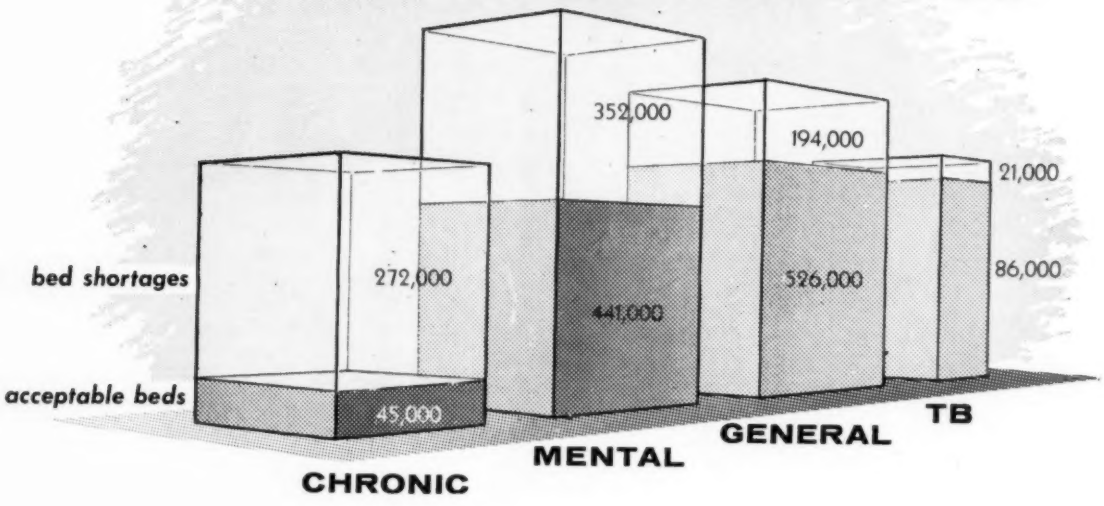
Available: Loan—Public Health Service, Communicable Disease Center, 50 7th St., NE., Atlanta 5, Ga. Purchase—United World Films, Inc., 1445 Park Ave., New York 29, N. Y.

Designed to be shown in lieu of making a field trip or to supplement a field trip, the filmstrip shows the equipment of a large modern water treatment plant. It takes the viewer through the plant, beginning with the raw water and intake facilities and structures and following through the chemical treatment, coagulation and settling processes, and the filtering and chlorinating operations. The corrosion control equipment is also pictured.

Adjusting a chlorinator.

Panoramic view of a trickling filter plant.

Hospital Beds in the United States, 1955



By LESLIE MORGAN ABBE, B.S.

THE COMPREHENSIVE, long-range plans for hospital facilities developed in connection with Title VI of the Public Health Service Act are revised annually. This continuing responsibility of the official State hospital planning agencies has come, with ripening experience, to provide an authoritative sourcebook on the Nation's hospital resources. Both total capacities and highlights of operating data are recorded in these annual tabulations. By "capacity" is meant that capacity for which the hospital was planned, rather than a fluctuating bed count, which may reflect either a serious overcrowding or a closed wing. Also, beds which are unacceptable because of functional or physical hazards are listed separately from the acceptable capacity.

Table 1 shows on this basis the record of existing hospital beds in each State and Territory as of January 1, 1955, according to the four principal categories of service provided: general, mental, chronic, and tuberculosis. States are grouped, for convenience of comparison, by the broad socioeconomic regions of the United States.

We now have approximately 1,100,000 acceptable beds in all four categories, with 176,000 additional beds which were classified by the

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This current inventory and continuation report brings up to date the general review of hospital bed requirements in the United States, published in *Public Health Reports*, April 1953, p. 425. It also outlines the present situation in other types of medical facilities and pending efforts for their expansion. The report is limited to hospital bed needs and related accomplishments in that field, including the Hospital Survey and Construction (Hill-Burton) Program. It does not cover nursing home beds and other fields of accomplishment such as the construction of public health centers, State health laboratories, and related health facilities.

State agencies as nonacceptable for long-range use. Nearly one-half of these acceptable beds, 526,000, are in general hospitals, and mental hospitals have 40 percent of the total. The record of nonacceptable beds is undergoing continual change, as closer inspections identify other obsolete and hazardous conditions. New construction, on the other hand, is replacing and removing from the record a considerable number of such outmoded facilities.

The data in table 1 do not include beds for civilians in Federal hospitals. In general, these do not provide communitywide service available to the general public. According to recent reports, there are 117,000 such beds in operation in veterans hospitals and about 8,000 more in hospitals operated by the Public Health Service for merchant seamen and others, including some Indian facilities.

What Has Happened Lately

During World War II, hospital construction was virtually at a standstill. After 1946, accumulated reserves of public and private funds were applied to meet long-deferred needs. The encouragement of Federal assistance under the Federal Hospital Survey and Construction Act of 1946 combined to establish an unprecedented peak in hospital construction volume.

Figure 1 shows the history of hospital construction from 1920 to date, at constant prices, and in relation to a growing population. This chart indicates that the postwar peak volume of construction in 1950 amounted to $5.00 per capita as compared with $1.00 per capita, or less, during 1942–44 and as compared with a previous high point in 1929 of about $3.50 per capita, at constant prices. If the volume of direct Federal construction and federally aided construction is excluded, the remainder undertaken entirely by State and local resources is somewhat less than the 1929 volume per capita—or less than $3.00. It will be seen that relative volume has declined sharply from the postwar peak.

Studies on the regional distribution of the recent volume of hospital construction (*1*) show that the largest total activity per capita is occurring in the high-income census regions of the Nation. Federally aided construction accounts for nearly all new work in the regions of lowest income, while in the region of highest income federally aided construction is a minor portion of total construction activity.

The annual log of the State hospital plans, from its beginning in 1948, helps to put this construction history in perspective. It reflects the net gains from new construction, against mounting obsolescence and rapid growth in population. In addition to inventories, these plans show the remaining need in each category of hospital, according to standards prescribed by the basic act and regulations thereunder.

The annual summary of beds and additional needs from 1948 to 1955 is contained in table 2. This record shows that there are today nearly 260,000 more hospital beds in the country than in 1948; of this number, 220,000 are acceptable beds. On the other hand, 27,000 more nonacceptable beds are recorded. The net progress in reducing the total backlog of need has been limited, amounting to about 70,000 beds, or less than 8 percent. Nationally, our general hospitals now have 73 percent of total requirements, while mental hospitals have only 56 percent of requirements, and chronic hospitals

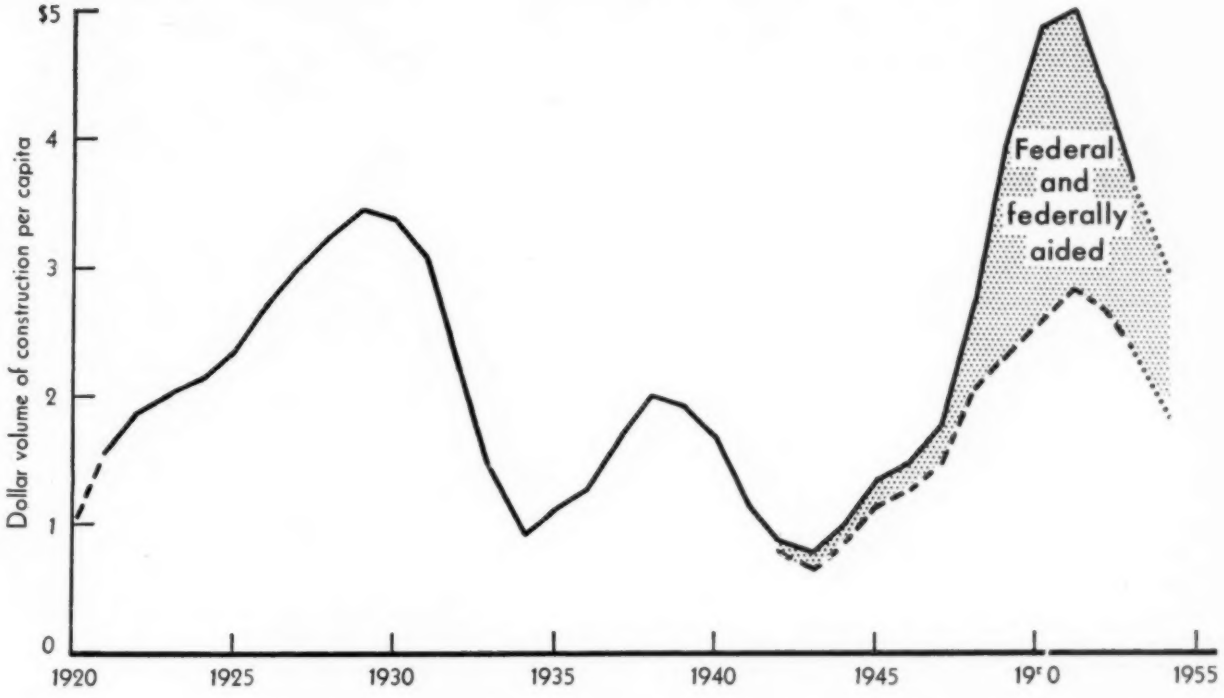
Table 1. Existing civilian hospital beds[1] in the United States and Territories, by service category, as of January 1, 1955

State and socioeconomic region	General		Mental		Chronic		Tuberculosis	
	Acceptable	Nonacceptable	Acceptable	Nonacceptable	Acceptable	Nonacceptable	Acceptable	Nonacceptable
United States and Territories	**526,458**	**74,783**	**441,440**	**71,838**	**45,016**	**15,303**	**85,901**	**14,333**
New England	**29,995**	**7,201**	**33,810**	**7,088**	**7,592**	**2,025**	**5,474**	**1,301**
Connecticut	6,741	801	8,530	1,925	1,779	53	1,693	---
Maine	2,087	1,381	2,478	54	156	---	50	404
Massachusetts	16,197	3,817	15,926	4,877	4,316	1,972	2,848	849
New Hampshire	1,842	421	2,314	---	---	---	88	45
Rhode Island	1,967	394	2,979	---	1,291	---	622	---
Vermont	1,161	387	1,583	232	50	---	173	3
Middle East	**129,112**	**23,207**	**135,344**	**21,340**	**13,656**	**2,110**	**19,442**	**6,740**
Delaware	1,483	12	804	820	336	---	223	66
District of Columbia	2,706	1,363	4,724	127	180	40	935	107
Maryland	7,781	---	7,368	125	2,056	1,363	1,718	303
New Jersey	15,214	1,824	19,584	1,008	1,246	210	3,114	157
New York	59,566	10,658	70,406	10,326	8,092	178	8,193	4,525
Pennsylvania	35,598	8,251	29,593	7,962	1,586	319	4,019	1,478
West Virginia	6,764	1,099	2,865	972	160	---	1,240	104
Southeast	**95,543**	**9,889**	**72,355**	**12,265**	**4,637**	**430**	**16,589**	**730**
Alabama	8,645	166	3,351	---	329	---	814	67
Arkansas	4,341	1,672	2,700	1,761	116	---	1,653	---
Florida	9,829	692	8,867	195	998	156	1,942	---
Georgia	8,842	1,829	10,894	30	728	115	2,096	---
Kentucky	7,961	560	7,360	75	312	---	1,324	30
Louisiana	11,094	481	7,609	3,505	372	---	1,497	36
Mississippi	5,685	1,682	3,591	1,982	---	27	650	---
North Carolina	13,756	214	9,672	---	415	---	2,733	---
South Carolina	6,781	168	3,738	---	172	---	839	56
Tennessee	9,087	1,828	8,154	471	1,135	132	1,720	262
Virginia	9,522	597	6,419	4,246	60	---	1,321	279
Southwest	**41,128**	**3,397**	**23,766**	**303**	**1,898**	**167**	**7,124**	**42**
Arizona	3,094	422	1,544	260	359	40	820	22
New Mexico	2,876	102	1,184	43	55	43	706	---
Oklahoma	7,834	303	8,689	---	544	---	1,095	---
Texas	27,324	2,570	12,349	---	940	84	4,503	20
Central	**139,494**	**17,645**	**98,001**	**25,823**	**8,268**	**8,888**	**21,219**	**2,688**
Illinois	31,618	4,107	20,488	7,433	983	205	5,139	---
Indiana	9,287	2,659	6,282	2,857	292	150	1,154	553
Iowa	9,383	1,425	3,284	5,167	805	7,995	641	132
Michigan	20,326	4,528	12,945	7,238	1,693	184	5,033	801
Minnesota	11,096	1,608	9,534	402	517	---	1,759	65
Missouri	16,423	1,106	12,888	---	2,294	---	2,048	---
Ohio	27,655	1,375	20,359	2,228	890	345	3,920	542
Wisconsin	13,706	837	12,221	498	794	9	1,525	595
Northwest	**33,089**	**5,279**	**22,007**	**2,786**	**1,490**	---	**2,212**	**563**
Colorado	6,021	781	5,582	424	41	---	363	275
Idaho	2,042	330	1,298	---	---	---	100	40
Kansas	7,556	1,118	2,556	2,285	32	---	506	42
Montana	3,473	321	1,950	---	---	---	335	62
Nebraska	5,684	661	5,094	77	1,079	---	290	---
North Dakota	2,825	526	1,725	---	60	---	350	---
South Dakota	2,464	532	1,896	---	103	---	118	144
Utah	1,891	606	1,134	---	70	---	100	---
Wyoming	1,133	404	772	---	105	---	50	---
Far West	**50,723**	**5,335**	**52,825**	**1,885**	**6,850**	**712**	**9,365**	**1,722**
California	37,215	3,630	40,469	1,113	6,423	712	6,884	1,419
Nevada	869	115	440	---	16	---	48	---
Oregon	5,283	533	4,667	---	---	---	500	50
Washington	7,356	1,057	7,249	772	411	---	1,933	253
Territories	**7,374**	**2,830**	**3,332**	**348**	**625**	**971**	**4,476**	**547**
Alaska	508	381	18	348	41	---	472	315
Hawaii	1,371	774	903	---	282	935	1,232	60
Puerto Rico	5,376	1,675	2,396	---	249	36	2,767	172
Virgin Islands	119	---	15	---	53	---	5	---

[1] Does not include Federal facilities.

SOURCE: State plans for hospital construction, approved under Title VI of the Public Health Service Act.

Figure 1. This history of hospital construction, 1920–54, shows postwar peak and decline. Relative volume per capita is indicated by 3-year moving averages of constant prices (1947–49=100).



14 percent. Tuberculosis hospitals are now reported as having 89 percent of requirements.

Where the Shortages Are Found

Our present need for hospital beds is distributed very unevenly among the States and among areas within States. There are also wide differences among the categories of hospitals, according to the standards applied in the comprehensive State hospital plans. The standards in effect under the Hospital Survey and Construction Act are empirical, based upon those measures having most general acceptance as related to true medical need, according to modern standards of medical practice. They are related to population, with the exception of need for tuberculosis beds. The computation of this need, after extended study, has recently been transferred, by regulation, from a mortality basis to a more realistic one based on incidence of new cases.

Figures 2 and 3 show the total remaining need, in beds per 1,000 population, in relation to the average income per capita of the States. This need is substantially greater in low-income States, but there are wide variations from the general pattern. This is true also of the present shortages in each of the separate categories of hospitals.

Perhaps the most striking relation shown by this chart, aside from the pattern of high need with low income, is the great variation in need for mental hospitals, among States with similar incomes.

There are several probable reasons for this variation:

First, it is quite likely that the States have not all faced this problem with comparable vigor, even though they may have comparable financial means.

Second, the present record of acceptable and nonacceptable beds does not reflect a uniform or consistent appraisal of obsolescence in each State.

Finally, there may be differences among the States in actual total need. This is not allowed for by the uniform standard applied, and there is now no detailed evidence on the matter.

The record of remaining need for chronic

Table 2. Civilian hospital beds [1] in the United States and Territories, 1948–55

Hospital category and year [2]	Total beds needed [3]	Existing beds				Additional beds needed
		Total	Acceptable		Nonacceptable [4]	
			Number	Percent of total need		
All categories						
1955	1, 926, 600	1, 275, 072	1 [illegible]	57. 0	176, 257	838, 745
1954	1, 887, 372	1, 242, 087	1, [illegible]56	57. 4	159, 031	812, 765
1953	1, 899, 279	1, 218, 781	1, [illegible]27	55. 7	161, 354	848, 567
1952	1, 899, 806	1, 193, 836	1, 0[illegible]3	53. 6	176, 013	881, 983
1951	1, 883, 487	1, 185, 480	1, 009 918	53. 6	175, 562	873, 569
1950	1, 850, 052	1, 118, 535	952 [illegible]96	51. 5	166, 339	897, 856
1949	1, 776, 673	1, 025, 179	879, 872	49. 5	145, 307	896, 801
1948	1, 776, 401	1, 016, 712	867, 960	48. 9	148, 752	908, 441
General hospitals						
1955	720, 001	601, 241	526, 458	73. 1	74, 783	193, 543
1954	704, 400	589, 565	515, 934	73. 2	73, 631	188, 420
1953	714, 469	572, 493	495, 185	69. 3	77, 308	219, 222
1952	708, 574	554, 084	474, 334	66. 9	79, 750	234, 240
1951	700, 952	548, 798	469, 192	66. 9	79, 606	231, 760
1950	682, 601	513, 814	437, 786	64. 1	76, 028	244, 815
1949	652, 611	474, 532	397, 168	60. 9	77, 364	255, 443
1948	652, 974	469, 398	388, 144	59. 4	81, 254	264, 830
Mental hospitals						
1955	793, 125	513, 278	441, 440	55. 7	71, 838	352, 349
1954	773, 428	500, 568	437, 659	56. 6	62, 909	336, 989
1953	766, 463	490, 598	431, 007	56. 2	59, 591	336, 676
1952	755, 097	482, 733	412, 932	54. 7	69, 801	342, 165
1951	744, 323	483, 310	415, 530	55. 8	67, 780	328, 793
1950	725, 203	462, 859	399, 138	55. 0	63, 721	326, 065
1949	692, 150	428, 931	381, 627	55. 1	47, 304	310, 523
1948	690, 381	427, 201	380, 343	55. 1	46, 858	310, 038
Tuberculosis hospitals						
1955	96, 507	100, 234	85, 901	89. 0	14, 333	20, 902
1954	100, 467	101, 425	86, 035	85. 6	15, 390	21, 707
1953	112, 075	100, 204	86, 698	77. 4	13, 506	30, 934
1952	133, 899	99, 147	87, 550	65. 4	11, 597	46, 349
1951	140, 391	96, 955	85, 351	60. 8	11, 604	55, 040
1950	148, 936	94, 024	81, 511	54. 7	12, 513	67, 425
1949	155, 101	85, 466	72, 560	46. 8	12, 906	82, 541
1948	155, 987	84, 158	71, 151	45. 6	13, 007	84, 836
Chronic hospitals						
1955	316, 967	60, 319	45, 016	14. 2	15, 303	271, 951
1954	309, 077	50, 529	43, 428	14. 1	7, 101	265, 649
1953	306, 272	55, 486	44, 537	14. 5	10, 949	261, 735
1952	302, 236	57, 872	43, 007	14. 2	14, 865	259, 229
1951	297, 821	56, 417	39, 845	13. 4	16, 572	257, 976
1950	293, 312	47, 838	33, 761	11. 5	14, 077	259, 551
1949	276, 811	36, 250	28, 517	10. 3	7, 733	248, 294
1948	277, 059	35, 955	28, 322	10. 2	7, 633	248, 737

[1] Excluding Federal facilities.
[2] As of January 1, each year.
[3] Set by Title VI of the Public Health Service Act and regulations thereunder. For some categories (tuberculosis and mental, 1953–55, and general, 1953–54), certain States now have beds in excess of current standards of need.
[4] Classified by State agencies, on the basis of fire and health hazards.

SOURCE: State plans for hospital construction, approved under Title VI of the Public Health Service Act.

facilities indicates that only a sta as been made, principally in the high-inc States, toward providing specific facili · long-term care. The State variatic ed for general hospitals in relation to incon s much less pronounced than at the beginn of the program of Federal assistance f ospital construction.

There are still extreme shortag general hospital facilities in specific ho service areas. Service areas for hosp ... e correspond in general to trading areas. general hospitals, the limits of these ar ... ave been defined throughout the country i State hospital construction plans. A recent study of these plans shows that, of a total of 2,275 service areas, there are still 174 which have no acceptable general hospitals. These areas include a population of 3.2 million. There are 255 other areas with less than 50 percent of total need met; these have a population of 21.8 million. One of the more pressing problems of today, therefore, is to induce construction in these areas of maximum need, where 25 million people have below 50 percent of their general hospital requirements provided.

What Else Besides Hospitals?

Health care today requires facilities for prevention, diagnosis, treatment, extended care, and rehabilitation. Beds in hospitals do pro-

Figure 2. The total bed shortage, in 1955, for hospitals of all categories is greatest in low-income States, but there are wide variations from the general pattern.

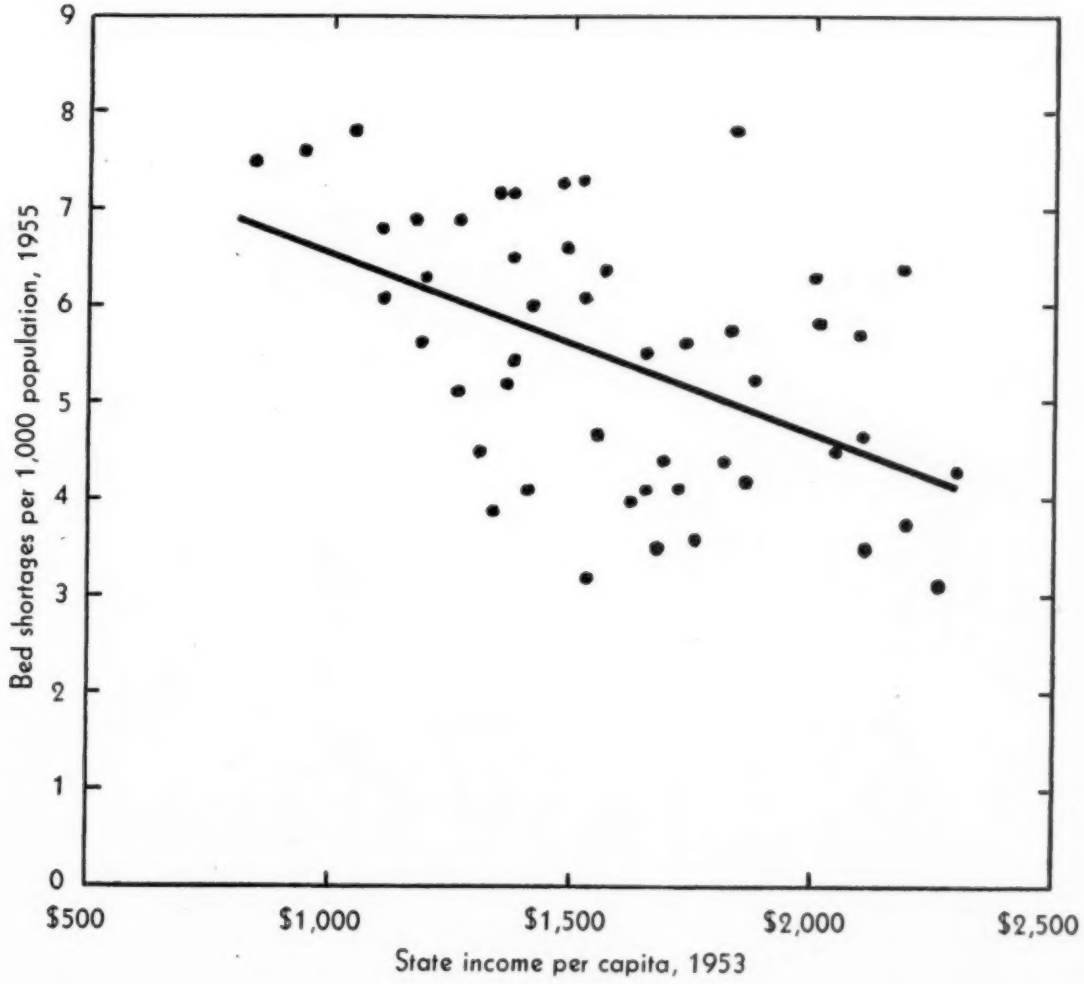
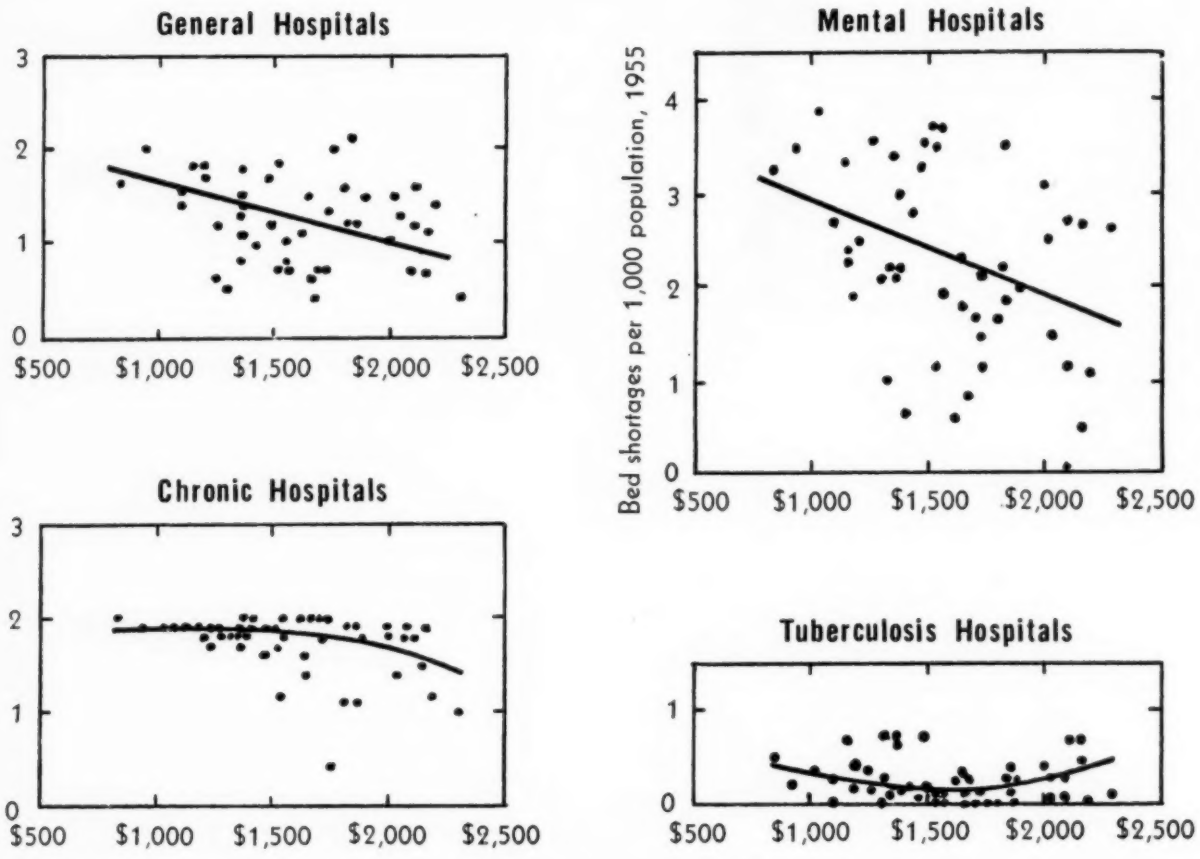


Figure 3. Principal hospital categories show widely different patterns of shortages in relation to State income.



vide for the care of acute and long-term illness, under direct medical attention. However, skilled care, not requiring hospital resources, may be provided under medical supervision in nursing and convalescent homes. Diagnostic and treatment centers for ambulatory patients can do much to lessen the duration and effect of illness. Rehabilitation centers are another important form of health facility needed to restore disabled persons to the maximum degree of self-sufficiency. Total needs in these types of facilities and the existing plant are still unknown. A recent national survey of nursing homes (*2*) shows that there are now about 200,000 beds with skilled nursing care in such facilities.

The program of Federal assistance for hospital construction was broadened by 1954 amendments to the Public Health Service Act to include additional assistance for facilities providing long-term care (either in chronic hospitals or in nursing homes), for diagnostic or treatment centers for ambulatory patients, and for comprehensive facilities for the disabled. Statewide inventories are still in process from which State plans will be developed for a construction program relating to these types of facilities.

Summary

New hospital construction has been substantial throughout the postwar era.

Net gain in relation to total bed need has been considerable for general hospitals; additions to mental hospitals have not kept pace with population growth and obsolescence.

Statewide remaining bed need is unevenly

distributed and tends to be substantially higher in low-income States, with total construction volume smaller in low-income regions than in regions of highest income.

Growing attention is being given to related health facilities besides hospitals, in order to round out comprehensive health services.

Experience is maturing on broad planning for hospital bed needs, but need for other types of medical facilities has just begun to be appraised systematically.

REFERENCES

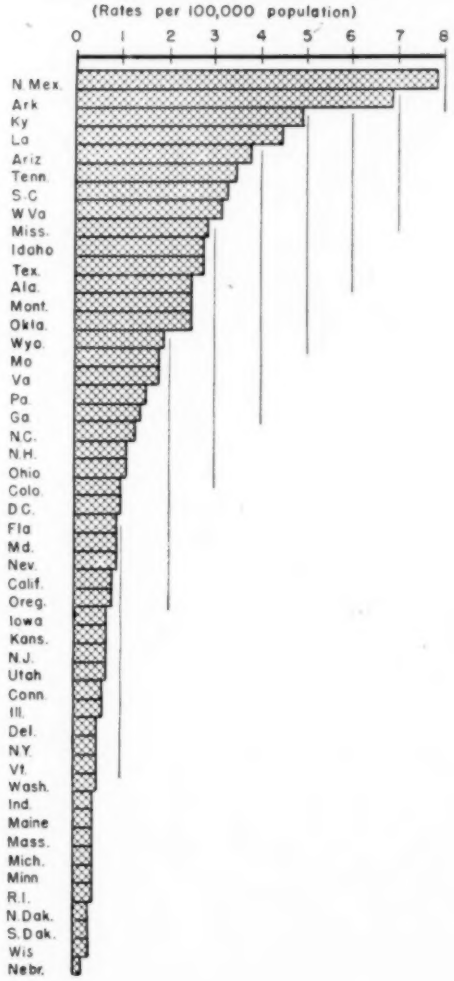
(*1*) Cronin, J. W.: Hospital construction—Progress and prospects. Hospitals 28: 53–55 (1954).

(*2*) Solon, J., and Baney, A. M.: Inventory of nursing homes and related facilities. Pub. Health Rep. 12: 1121–1131, December 1954.

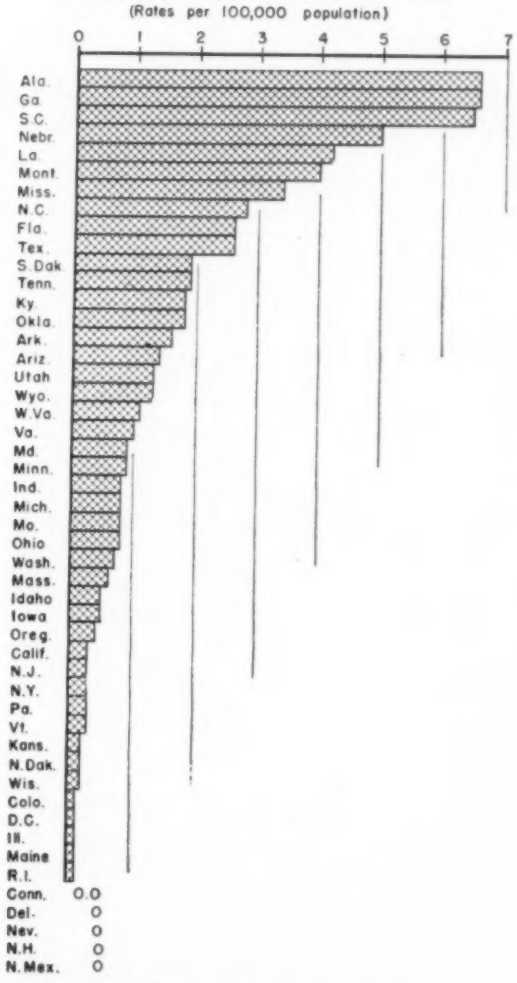
trends

The provisional rates for typhoid fever and for diphtheria were 1.4 and 1.3 cases, respectively, per 100,000 estimated population for 1954 in the United States. Rates for each disease for individual States are shown in the charts below.

Provisional Rates for Typhoid Fever Cases Reported by Each State: 1954



Provisional Rates for Diphtheria Cases Reported by Each State: 1954



Charts from the National Office of Vital Statistics, Public Health Service

How Charleston County Uses a Staff Newsletter

By Gerald J. Specter, M.P.H.

NEWS AND VIEWS, the staff newsletter of the Charleston County (S. C.) Health Department, made its first appearance in December 1952. Since then, 30 issues have come off the press.

The idea of a house organ is not new. Nor is the use to which a house organ was put in our health department any different from what you would ordinarily expect to find. The value in using a departmental publication can only be measured by asking, "Does it accomplish what it has set out to do?"

Two years ago, there was a noticeable lack of communication among staff members and divisions in this health department. Each employee was busily engaged in performing his own particular job. Each division was principally concerned with its own objectives rather than with those of the overall department program. Each division saw health problems only in its own light.

Perhaps this atmosphere was partly due to a lack of understanding of each member's place on the health department team and of how one staff member could supplement the work of another. Could this be the situation?

What aid could the sanitarian be to the public health nurse in the district?

How did the laboratory staff fit into the picture?

Mr. Specter, public health educator, Charleston County Health Department, Charleston, S. C., since 1952, is also executive secretary for the Charleston County Safety Council and for the Charleston County Health Council. He was with the Pittsburgh City Health Department in 1949 and 1951 as a sanitarian.

What kept the statistical clerks, the clinic personnel, the laboratory technicians, and some of the lesser known workers so very busy?

What were we all doing?

For example: What were the sanitarians doing in connection with the county's new program of regulating subdivisions? What were the public health nurses doing to improve the rate of diphtheria immunization? What was the health council doing about dental health education in the public schools?

These were some of the questions that we thought needed answering if the "oneness" of team approach was to be achieved in our county. This problem of staff communication became the main topic of discussion at a meeting of the health officer and division supervisors, where it was unanimously decided to undertake to educate each staff member about the position on the team assigned to his teammates.

Many suggestions were offered. One was to hold staff seminars. Another proposed inservice training for each division, using these sessions for outlining the functions of all other divisions. A third suggestion was to have some method of keeping staff members informed and up to date on what was happening within the entire department.

The idea of circulating a monthly health department newsletter was broached to the staff. Each division would be asked to contribute information that would answer many of the questions staff members might have about other health jobs within the program. Staff members would also be invited to contribute personal items to give the newsletter an informal touch.

News, Views, and Information

A poll of the entire staff told us that a newsletter would be received with enthusiasm, and plans were made to get into print as soon as possible.

No attempt was made to make *News and Views* a journalistic masterpiece. Its tone is informal, yet distinctive.

Early issues featured news about the activities of the various divisions.

The news is not confined to health department happenings specifically—mention is made of extracurricular activities. Articles of special public health interest to the staff are also used. A special section in each issue is devoted to birthday greetings and mention of service records. Special stories cite honors received by employees.

As time went by, we received more news items than we could possibly use in a single issue. When this happened, we enlarged our newsletter from the original one sheet to double this size.

In format, *News and Views* is mimeographed on 8½-inch by 11-inch paper. Each page is typed in two columns. Items are kept brief, personal, and informal. There is no set space restriction. Only the amount of news received determines how many pages an issue will contain.

The early runs numbered 75 copies until requests for the newsletter from outside the county department began to come in. The circulation list has been expanded to include staff members of the South Carolina State Board of Health, members of our own board of health, members of the county council, the legislative delegates from our district and members of their staff, former employees of our department, local voluntary health agencies, and many others. Circulation now exceeds 250 copies.

A brief estimate of costs for a 4-side, 2-page issue, follows:

Supplies	*Cost*
4 stencils [1]	$0.60
½ ream paper	.55
Ink (approximate)	.25
2d class postage	2.00
1st class postage	1.50
Envelopes	.80
Total cost for printing and mailing [2]	$5.70

[1] The masthead page can be produced in larger quantities in advance.

[2] 40 percent of distribution made in building where health department and other agency offices are located.

After 25 issues of the newsletter, in July 1954, we asked our 68 staff members to help us evaluate *News and Views*. Their answers to a questionnaire provided a small study to help us determine whether the letter was accomplishing what it had set out to do.

The Evaluation

The first inquiry dealt with the extent to which each staff member read the house organ—

80 percent said they read *News and Views* thoroughly.
5 percent answered that it was only partly read.
15 percent did not comment.

We next asked how well do most items interest the reader—

75 percent answered that most items were of interest to them.
10 percent indicated fair interest.
15 percent had no opinion.

Another question asked whether *News and Views* has helped the individual to know more about health department activities other than his own—

75 percent answered that it has helped.
10 percent answered that it has helped somewhat.
15 percent had no comment.

We also wanted to know to what degree, as a result of reading the newsletter, the reader became familiar with the overall program of the health department—

67 percent replied, "Very much more."
25 percent stated that they were only a little more familiar with the overall program.
3 percent said their awareness was the same as before.
5 percent did not comment.

Next, we asked whether *News and Views* helped clarify an individual's understanding of the health department's program by familiarizing him with the work of the various divisions—

70 percent indicated that it had accomplished this purpose.
5 percent indicated that it had not.
10 percent were undecided.
15 percent had no comment.

When we asked whether a newsletter such as ours helps cement relationships among staff personnel, we received a more divided reply—

58 percent thought the relationship was much improved.
32 percent felt relationships had improved a little.
10 percent had no opinion.

We then asked, "Do you think having a newsletter has been worth while?" To this—

85 percent answered, "Very much so."
5 percent said such newsletter was all right.
10 percent made no comment.

No one answered that *News and Views* was not worth while.

Our final question asked whether each staff member was satisfied with *News and Views* as it now stands—

85 percent replied they were satisfied.
5 percent believed some changes were in order.
10 percent did not comment on this question.

From their answers, the staff seems to think *News and Views* has helped to bring each individual closer to one another. It has helped, we believe, to contribute to the feeling of "oneness," so very much needed and has given direction and insight to the team approach.

We realize that a staff newsletter is not the complete answer, but from all indications, it seems to be a start in the right direction. Other steps being undertaken are joint planning, regularly scheduled general staff conferences, inservice training programs, and free exchange of ideas. There is no single panacea, but we hope all these efforts will produce results.

An Important Date

Each month your health department and many hospitals, laboratories, schools, clinics, and homes receive a copy of PUBLIC HEALTH REPORTS, mailed to arrive on the 20th, or even earlier, depending upon geographic location of the subscriber.

Its pages carry timely research reports, analyses of current trends, new methods, concepts, and ideas, and topical reviews for the busy scientist, teacher, or public health worker. Capsule coverage of important public health meetings, like those of the American Public Health Association, help the PHR reader.

Not all our readers receive the journal on the delivery date. An official copy is trickled down to them through a series of other readers. Sometimes the trickle slows to a complete halt.

You can have your personal copy promptly. Use the subscription blank on the inside back cover. Let the 20th of each month be an important date for you, too.

Second Antibiotics Symposium

At the Second Annual Symposium on Antibiotics, held October 25–29, 1954, in Washington, D. C., more than 250 investigators presented in 172 reports the results of their research and clinical trials with antibiotics.

The therapeutic value of antibiotics was reaffirmed for many clinical conditions, and use in new fields was favorably reported. Presented also were new perspectives on synergism between individual antibiotics and between antibiotics and hormones.

Broader Use

Extended use of antibiotics within the field of medicine was manifested in three new salients: growth stimulation, inhibition of tumors, and antifungal activity.

In groups of undernourished children with simple growth failure, growth was favorably influenced by the administration of small quantities of antibiotics, both alone and in conjunction with other dietary supplementation.

According to symposium reports, both crude filtrates and a new antibiotic isolated from actinomycete cultures exhibited tumor-suppressing activity. At present, the antitumor effect of these antibiotics does not seem to be related to their antimicrobial action. In vivo studies with the new actinomycete revealed consistent inhibition of Crocker sarcoma 180 and of transplantable RC carcinoma. Some mildly consistent inhibition of the Harding-Passey melanoma in mice was reported. This new agent was also administered to humans with inoperable

Origin and activity of 14 new antibiotics reported at the antibiotics symposium, October 1954 [1]

Name	Origin	Activity
Actinomycin C	*Streptomyces chrysomallus.*	Crocker sarcoma 180, RC carcinoma, leukemia (in mice).
Actinomycin D	*Streptomyces parvullus.*	
Anisomycin	*Streptomyces*	*Candida* and *Saccharomyces* fungi, *Trichomonas vaginalis* and *Trichomonas foetus*, *Endamoeba histolytica.*
Celesticetin	*Streptomyces caelestis*	Gram-positive bacteria.
Etamycin	*Streptomyces* (unidentified).	Gram-positive bacteria.
Fungichromin	*Streptomyces cellulosae*	Antifungal: *Saccharomyces cerevisiae, Aspergillus niger, Corpus albicans, Microsporum audouini, Trichophyton mentagrophytes, Blastomyces dermatitidis, Ascochyta linicola, Botryosphaeria ribis, Fusarium oxysporum, Alternaria solanium.*
Fungichromatin	Similar to Fungichromin.	Similar to Fungichromin.
Fungicidin	*Streptomyces noursei*	Mycoses: *Coccidioides immitis, Sporotrichum schenckii, Cryptococcus neoformans.*
PA–105	*Streptomyces antibioticus.*	Gram-positive bacteria, *Neisseria, Hemophilus, Brucella,* mycobacteria, rickettsiae, large viruses, some protozoa.
Pleomycin	*Streptomyces pleofaciens.*	Gram-positive and gram-negative bacteria.
Puromycin	*Streptomyces albo-niger*	*Endamoeba histolytica,* mammary adenocarcinomas (in mice), *Tetrahymena pyriformis* (W).
Spiramycin	*Streptomyces ambifaciens.*	Gram-positive bacteria.
Viridogrisein	*Streptomyces* (unidentified) and *Streptomyces griseus.*	*Clostridium, Corynebacterium, Diplococcus, Erysipelothrix, Micrococcus, Streptococcus.*
Griseoviridin	*Streptomyces* (unidentified) and *S. griseus.*	Broad-spectrum: *Clostridium, Corynebacterium, Diplococcus, Escherichia, Hemophilus, Neisseria, Shigella, Streptococcus.*

[1] Reprinted from *Antibiotic Medicine.*

or terminal malignant disease. A few of these patients have had remissions. Some remissions were brief, but others continue. Another new antibiotic has been shown to exhibit carcinostatic activity. The growth of mammary adenocarcinomas in mice has been inhibited.

Experimental studies on fungal infections, previously refractory to all antibiotics, indicate that a number of new antibiotics possess sufficient antifungal activity to warrant clinical trial. One group of these was obtained from among the products of streptomycete filtrates. Another new antibiotic has been tried in experimental mycotic infections in mice with considerable therapeutic success. Approximately 75 percent of the test animals survived cryptococcosis, coccidioidomycosis, and sporotrichosis. A number of other agents have exhibited an appreciable fungistatic effect in preliminary laboratory studies.

The reports revealed a continuing search for new antibiotics. Organizations which have already discovered or developed a number of useful agents appear to be intensifying their efforts for still more advanced preparations with respect to breadth of spectrum, greater tolerance, and greater pathogenic specificity. The 14 new antibiotics reported at the symposium are given in the table.

Safety Measures

Measures stressed during the symposium to enhance the safety of antibiotics and prevent abuse in using the agents were:

1. Elimination of the indiscriminate or incorrect use of antibiotics.

2. Systematic and comprehensive education in antibiotic application at the undergraduate, graduate, and postgraduate levels.

3. Wide public dissemination of the fact that self-medication is dangerous and that the common practice of demanding antibiotic medication from physicians should be abandoned.

4. Proper labeling of all antibiotics with warning as to the possible toxic reactions and the dangers of indiscriminate use.

The symposium was sponsored by the Department of Health, Education, and Welfare, Food and Drug Administration, Division of Antibiotics, in collaboration with the journal *Antibiotics and Chemotherapy*. The proceedings have been published under the title of "Antibiotics Annual, 1954–1955," and may be purchased from Medical Encyclopedia, Inc., 30 East 60th Street, New York 22, N. Y.

Program for Juvenile Delinquency

Ten long-range goals designed to improve methods of dealing with juvenile delinquency have been outlined by the Division of Juvenile Delinquency Service in the Children's Bureau.

The new division is seeking to help States and communities:

1. Acquire, in every community of 20,000 or more population, at least one police officer with special training in working with juveniles. Bigger cities will need a specialized juvenile division.

2. Make good detention facilities and services available to every juvenile court in the country so that juvenile delinquents will not have to be detained with adult criminals.

3. Provide expert physical and psychological examinations for each youngster in serious trouble before the courts decide what kind of care and treatment is needed.

4. Staff all courts with civil service probation workers trained in social services for children.

5. Establish juvenile court laws and practices that meet the standards recommended jointly by the National Probation and Parole Association, the National Council of Juvenile Court Judges, and the Children's Bureau.

6. Provide for juvenile delinquents training schools that have complete programs of education, health, mental health, recreation, and followup and provide one staff member for every 15 youngsters.

7. Focus the training on the individual youngster to help him find a satisfying, responsible role in the community.

8. Establish in each State at least one special institution for emotionally disturbed youngsters, separate and apart from adults.

9. Provide coordinating mechanisms through which public welfare, health, mental health, employment, courts, policy, training schools, and educational agencies can plan programs and pool experiences with private agencies.

10. Make regular and comprehensive reports on what is happening to juvenile delinquents so that States and communities and the Nation can measure progress toward the goal of an irreducible number of youngsters who get into trouble with the law.

Questions about the cause, the effect, the diagnosis, the infectivity, the clinical pattern, the prevention, and the treatment of trachoma are answered by an ophthalmologist from his experience and from the literature.

The Trachoma Story

By ARTHUR A. SINISCAL, M.D.

THE IMPORTANCE of trachoma "as a source of human suffering, as a cause of blindness, and as a national economic loss over large tracts of the world's surface is second to none among the diseases of the eye, or indeed, among diseases of all kinds."

Thus Sir Stewart Duke-Elder, a distinguished British ophthalmologist, assessed trachoma in a textbook published in 1934 (*1*). As late as 1950, it was estimated that 15 to 20 percent of the world population suffered from this disease (*2*).

Throughout the world, trachomatologists, ophthalmologists, sociologists, public health workers, and others are striving earnestly to improve the health and socioeconomic conditions of those afflicted with trachoma. But they wave no magic wand; what they accomplish, they accomplish through steady, organized effort, which depends in turn upon public understanding and support. The following pages tell of medicine's planned attack against this ancient infection.

According to Moutinho (*3*), trachoma was well known in the civilizations of the four great river valleys—the Hwang Ho and the Yangtze Kiang, the Indus and Ganges, the Euphrates and Tigris, and the Nile—many centuries before Christ. It was recognized and treated in ancient Egypt, Greece, and Rome, as well as in countries of Biblical fame. The Moslem conquests probably led to its spread to Europe as early as the eighth century (*4*), and, undoubtedly, Napoleon's campaign to Egypt in 1798–1802 was responsible in large measure for its dispersion among the Europeans (*5*).

Believed to have been introduced into the United States during colonial times by European immigrants (*6*), the disease was spread throughout a central belt reaching from the Allegheny Mountains to Kansas and Oklahoma, among the Indians as well as others. According to Cosgrove (*7*), the trachoma found in Missouri and Arkansas originated from persons who came into these States from Tennessee and Kentucky. The trachoma in New Mexico and Arizona and probably California is believed to have come from Mexico (*8*).

Today, trachoma is found on every continent (*4*). It is common in most of Asia, where it affects from 30 to 60 percent of the population. It is somewhat common in Europe, where it affects approximately 5 percent of the population. More prevalent in the Balkan States and in northern European countries than elsewhere on

Dr. Siniscal since 1944 has been medical director of the Missouri Trachoma Hospital in Rolla, a service of the division of health, Missouri Department of Public Health and Welfare.

that continent, it is present also in France, the Netherlands, Germany, Austria, Hungary, Italy, Ireland, Great Britain, Norway, Sweden, and Denmark.

Once a serious public health problem in the United States, particularly in the central portion where it is considered endemic, trachoma is now relatively rare. It is still present, however, in Missouri and Arkansas and, to a lesser extent, in southern Illinois. In Missouri, active cases are found in the southern half of the State, particularly in the cotton-growing lowlands and in remote regions of the Ozark hill country. Accounting for 1 out of 4 pensioners on the State's blind pension roll 25 years ago, trachoma now is the disease of only 1 out of every 10 blind pensioners.

Questions asked most frequently about trachoma are given here with the answers available from the experience of many workers. Although much is known about the cause, the diagnosis, the clinical manifestations, and the prevention and treatment of this disease, not every question can yet be answered finally or completely.

What Is Trachoma?

Trachoma is an infectious disease of the external lining membranes (or conjunctiva) of the eyeball and eyelids. It causes an inflammation of chronic duration, characterized by burning, itching, excessive lacrimation, and photophobia. Generally insidious in onset, it develops usually at a slow pace and is somewhat resistant to treatment. The disease is localized strictly to the conjunctiva of the eyelids and eyeball and to the tarsus and the cornea. The pathological changes in the tarsus and the cornea are deep seated and usually irreversible when once established. Persistent duration of inflammatory symptoms may lead to blindness, which results from corneal opacification and disintegration and, further, from cicatrized deformities of the eyelids and eyeball.

What Is the Cause of Trachoma?

The etiological agent is believed to be a large virus or inclusion body of the group which includes the psittacosis and lymphogranuloma venereum viruses. The inclusion body of trachoma is indistinguishable morphologically from that of the virus causing inclusion blennorrhea of infants and swimming pool conjunctivitis of adults (also called paratrachoma). Some workers have regarded the agents of these infections as belonging to the *Rickettsia* group, but Bengtson's (*9*) research has shown that the trachoma bodies are rather distinct from the rickettsiae. Generally speaking, the view is taken that the trachoma body is a virus, but the question has not yet been finally settled. The dividing line between bacteria and rickettsiae or between rickettsiae and viruses is not sharp.

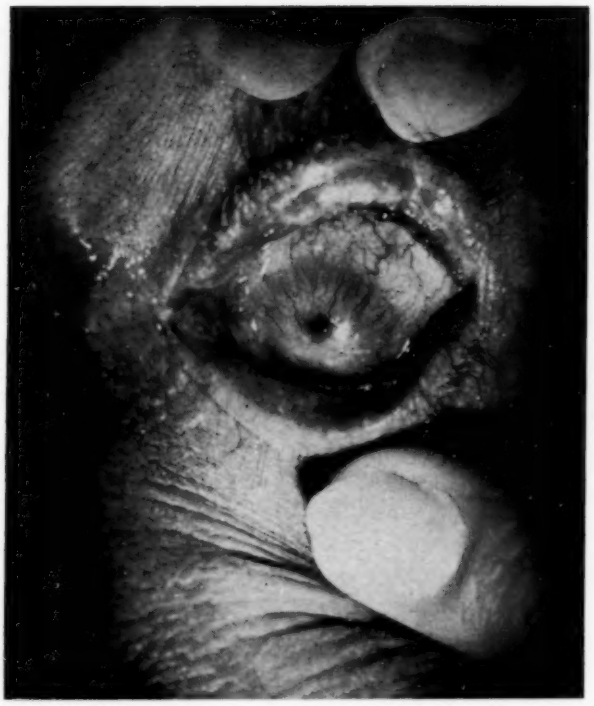
A great majority of scientists now believe that trachoma is due to the organism discovered by Prowazek and Halberstaedter. In 1907, they described cytoplasmic inclusions, the presence of which in the epithelial cells of the conjunctiva and the cornea manifests the first detectable sign of the disease in the laboratory. Thygeson (*10*) has pointed out that these intracellular parasites are relatively large particles and that their life cycle is very similar to that of the psittacosis and lymphogranuloma venereum viruses.

There is need for more research on the causative agent or agents of trachoma. The exact nature of the organism will remain obscure until it is definitely isolated and successfully cultivated.

How Are the Eyes and Eyesight Affected?

If the infection is allowed to progress without treatment for several months or longer, a lymphoid infiltration in the conjunctiva and in the subepithelial tissue will result in hypertrophy and thickening of the conjunctiva and eventually in connective tissue formation and scarring. Even the tarsal plates are involved and may become buckled or deformed as a result of cicatrization. Follicles may or may not develop, but the absence of these should not rule out the presence of the disease (*11*, *12*).

The most serious pathological complication of trachoma is considered to be the formation of pannus, which is a vascular invasion under the epithelium of the cornea. When pannus is allowed to progress centrally, the pupil becomes obscured by this veil-like opacity. Trichiasis,



Florid pannus covering complete upper half of cornea, as seen in advanced stage of trachoma. Pannus is pathognomonic of the disease.

a condition of ingrowing eyelashes, results from cicatrization of the lid structures; it causes the eyelashes to rub against the cornea, thereby destroying the epithelium and predisposing to ulceration, perforation, and dense corneal scarring. Blindness may be due to diffuse corneal scars in general, or to pannus formation over the pupillary area, or occasionally to secondary uveitis following perforation of the chamber and prolapse of its contents, resulting eventually in phthisis bulbi.

Is Pannus Essential to the Diagnosis?

Although the presence of typical trachomatous pannus is a solid basis for making a diagnosis of trachoma, its absence does not absolutely rule out the diagnosis. Some observers (*13–16*) believe that any one or more of the following signs should be sufficient to establish a diagnosis of trachoma: (*a*) presence of typical follicles; (*b*) presence of pannus; (*c*) presence of cicatrization; (*d*) punctate depressions at the periphery of the cornea resulting from cicatrization of corneal follicles; (*e*) finding of the inclusion bodies.

A study by Rice and Smith (*17*) of the records for 1,154 cases of trachoma found that 88 percent showed the presence of pannus involvement of the cornea. According to Cosgrove (*7*), a definite diagnosis of trachoma cannot be made without pannus unless a proved case has been seen in the same family. Recently, however, Julianelle and Smith (*18*) observed that approximately 37 percent of early trachoma cases do not show any pannus, and Mitsui (*19*) states that even a microscopic pannus can be absent in the earliest stage in some cases of trachoma. Mitsui observes that in Japan, microscopic pannus can be seen in about 50 percent of trachoma cases during the acute stage, and that marginal punctate infiltration of the cornea can be seen in a smaller percentage of cases.

Cuenod and Nataf (*20*), who stress the value of slit-lamp biomicroscopy in their monograph on corneal studies (*21*), state that pannus is one of the most constant pathological signs of trachoma, but that they believe it possible for true trachoma to occur without pannus, especially

Trachoma granules in the conjunctiva, as seen in the florid stage of the disease.

the early stage. Nataf (*22*) states further that, in his opinion, it is possible for certain forms of the infection to occur without pannus but that diagnosis in such cases should be made with reservations. Nataf believes that trachoma may possibly occur in certain regions without pannus, but that in order to prove diagnosis in such cases, it would be necessary to detect, after regression, the typical scarring pathognomonic of trachoma.

Why Is Early Diagnosis Important?

As in other infectious diseases, early diagnosis and treatment of trachoma prevent its spread. Early discovery also makes it possible to prevent the advanced stages with their irreversible complications.

A clinical diagnosis of trachoma in its early stage is always difficult, since the classical landmarks of pannus, corneal infiltration, mature follicles, or cicatrization may not be present. The lack of agreement as to a definite differential diagnosis of early trachoma makes necessary a laboratory confirmation of the diagnosis whenever possible. However, because the virus is difficult to isolate or cultivate, a negative laboratory finding is unreliable.

Although the presence of inclusion bodies may clinch a positive diagnosis, their absence does not necessarily verify a negative diagnosis. The reason for this is that microbiotic or cellular findings typical of trachoma infection are not present throughout the length of the disease; it may be possible to find positive material from conjunctival scrapings early in the disease, but not always. In this connection a serologic test would be helpful. There is a clear-cut need for research on the serology and immunology of this disease.

The presence of several or all of the following signs plus a history of contact should make one strongly suspect that the diagnosis is early trachoma: excessive lacrimation with photophobia; papillary hypertrophy of the palpebral conjunctiva; a peculiar haziness of the lower cul-de-sac indicating diffuse infiltration therein; swelling and decreased rigidity of the upper tarsus; tiny filamentous symblephara in the upper fornices; large, discrete follicles; incipient pannus; and upper corneal infiltration. These signs may occur in other conjunctival diseases, but in an endemic area of trachoma, one would be remiss in his duties if he neglected to take cognizance of them.

Lindner (*5*) states that in areas where trachoma is prevalent, every case of slight, ordinary conjunctivitis may be beginning trachoma. He considers the most important sign of the first stage to be the peculiar haziness of the conjunctiva of the lower cul-de-sac. Kuo (*23*) also stresses the importance of general haziness of the lower cul-de-sac, together with incipient pannus, in making an early diagnosis. Tabone (*24*) discovered that in a series of cases of eye infection in which diagnosis was difficult, approximately one-half of those tentatively labeled conjunctivitis later proved to be real trachoma.

Is Trachoma Highly Contagious?

Trachoma is not highly contagious; otherwise, it would be more widespread than it is. Because trachoma is more likely to be transferred from one member of a family to another member than to contacts outside the home, it is sometimes referred to as a family disease, but it is not hereditary.

Important factors in the epidemiology of trachoma are general levels of living, particularly as they relate to sanitation and housing conditions, and geography and climate. Migration of infected persons into areas with high standards of domestic hygiene is not attended with danger, but such migration into areas with low standards of hygiene, where geographic and climatic conditions favor the disease, would tend to facilitate its dissemination.

Like other infectious diseases, trachoma is more likely to spread where unsanitary and overcrowded living conditions prevail. Although it is sometimes seen in persons of exemplary habits of personal hygiene, it is more likely to take root in persons who are careless about such matters. The use of a common towel to wipe the face, for example, is an almost certain invitation to the disease. Improvement in economic status, with its concomitant improvement in sanitation and housing, will materially aid in the elimination of the disease.

In general, a high incidence of trachoma is

observed in areas with a high mean temperature and little rainfall and in flood districts near the estuaries of large rivers. In all of these, sun, wind, and dust act as conjunctival irritants and are factors predisposing to the infection. In Missouri, trachoma is prevalent not only in the mountainous areas, where the climate is hot and the air dusty, but also in the cotton-growing lowlands of the southeastern delta, where the climate is humid and windy and the winds are dust laden.

Does Diet Have Any Effect on Trachoma?

According to Rice and his co-workers (*25*), there is no evidence that a balanced diet supplemented with cod liver oil affected the course of trachoma in 18 untreated patients kept under observation for varying periods of time. However, it is the opinion of this writer, as well as that of other observers, notably Stucky (*26*) who made a great contribution to the prevention of trachoma in Kentucky, that inadequate diet and avitaminosis are contributory factors. At present, however, this concept must be regarded as unproved.

Glikson (*27*) states that his observations of over 25 years in Israel indicate that general nutrition is a decisive factor in an individual's immunity to this disease, and he adds that proper diet, including fresh milk and fresh, green vegetables, will shorten the duration of the disease or actually heal it. Murray (*28*) states that in South Africa adequate feeding supplemented by vitamin concentrates generally brings about a remarkable improvement within a few weeks even if no specific medication other than ablutions with saline is used. According to Bietti (*29*), if there is any importance in nutritional factors, lack of animal proteins and of calories is more likely to play a role than avitaminosis.

Are All Races Equally Susceptible?

Generally speaking, all races are susceptible to trachoma in only slightly varying degrees. American Negroes seem not to acquire the disease, but miscegenates are not necessarily immune. Murray (*28*) reports that in South Africa, Negro tribes become afflicted with trachoma to a rather large extent. Extensive surveys indicate that the disease affects about 29 percent of the natives in that area.

In Missouri, the disease predominates among persons of northern European ancestry, notably Irish, Scottish, English, German, and Scandinavian. Their forefathers formed the forward ranks of the pioneers who moved westward from the coastal States, bringing the infection with them. The disease became established in these families and still flourishes in some of their settlement areas, notably in the southern half of the State. Negroes in the State do not acquire the disease.

It is thought by some observers that the dark-pigmented races, especially Negroes, are more immune to trachoma than the light-pigmented ones. Seemingly in support of this contention is the fact that when trachoma in an Egyptian passes over to a European, the disease manifests itself much more rapidly and has a much more devastating effect. Wilson (*30*) states that trachoma tends toward spontaneous cure more frequently among Egyptians than among Europeans. He observes further that some of the Egyptians suffer little from this disease and that the lesions are mild in comparison with the lesions among Europeans.

Studies by Thygeson (*31*) indicate that the trachoma bodies show a predilection for the superficial cells of the conjunctiva without involvement of the basal cells and that they tend to spare the pigmented cells. This possibly could explain the resistance in certain dark-pigmented races to trachoma and the more favorable development of the disease among them.

Bietti (*32*) states that there are racial differences in the sensitivity to the disease and that the Negro particularly is more resistant. He does not maintain that degree of pigmentation is important, but rather that some innate, racial characteristic itself is responsible. In support of this theory, he mentions that among various African native tribes of equal pigmentation, some tribes develop the disease more severely and in greater numbers than others.

Rice (*33*) believes that the severity of trachoma varies considerably in different parts of the world and even within the borders of our own country. He states that trachoma probably does less damage among the Chinese, for

instance, than it does among the white population of Missouri and Arkansas. Factors of immunity and adaptability may even be more important than factors of race.

To sum up, although trachoma is very widespread throughout the Near East and the Orient, the disease appears to be less distressing in natives of these regions than in Europeans and their descendants, among whom the prevalence is relatively low.

Why Does Trachoma Still Exist?

Trachoma still exists because it was so widespread in the ancient civilized world and because, too, it did not receive the advantages of a modern medical campaign until the past 3 or 4 decades. Before the advent of sulfonamides and antibiotics, treatment was largely empirical rather than specific.

Until recently, there was little organized attack against this disease abroad and practically none in this country. The idea of international collaboration in trachoma control has been in existence for almost 100 years, but only with the founding of the Anti-Trachoma League and the International Organization Against Trachoma in 1923 did the idea progress to action. Their quarterly publication, *Revue internationale du trachome*, provides an authoritative and dynamic organ for the consolidation and dissemination of knowledge and facts about the disease.

At present, mass treatment of trachoma has been started by the governments of many foreign countries, notably Formosa, French Morocco, and Tunisia, with the assistance of the World Health Organization, and initial favorable results are reported. Projects are being planned in Yugoslavia and Egypt, and surveys in Western Australia (*34*) and in South Africa (*28*) have emphasized the need for action in these areas.

In the United States, a program of attack against the disease was begun in the Appalachian area in 1913 by the Public Health Service (*35*). During the next 11 years, one or more temporary diagnostic and treatment centers were set up in Kentucky, Virginia, West Virginia, Tennessee, North Dakota, Arkansas, Georgia, and Missouri, and in 1923 a permanent hospital and clinic center was established at Rolla, Mo., by the Public Health Service in cooperation with the State. In more recent years, the States of the trachoma belt have carried on the battle against the disease.

Table 1. Operations performed at the Missouri Trachoma Hospital, 1932–53

Year	Number of patients admitted	Number of operations			
		Total	Grattage	Entropion	Other [1]
1932–33	635	598	257	64	277
1934–35	609	452	228	77	147
1936–37	562	297	139	56	102
1938–39 [2]	468	137	65	53	19
1940–41	750	143	25	69	49
1942–43	934	181	60	36	85
1944–45	868	111	25	21	65
1946–47	893	114	25	33	56
1948–49	1,076	40	8	5	27
1950–51	1,179	61	8	11	42
1952–53	1,072	30	18	2	10

[1] Includes canthoplasties, electrolytic epilation, pterygia, dacryocystectomies, tarsectomies, enucleations, and miscellaneous procedures. [2] No surgery done for 6 months in 1939 during changeover to new hospital.

Can We Rid This Country of Trachoma?

During the past four decades, the prevalence of trachoma has decreased markedly (*36*). The program against the disease has been changing gradually from treatment of active, florid cases to the practice of preventive medicine and treatment of early and late and terminal cases. As shown by the data in tables 1 and 2, the number of operations performed at the Missouri Trachoma Hospital for trichiasis, entropion, grattage, and lid deformities and the number of cases of trachoma found among field clinic patients are declining steadily.

In the other States of the trachoma belt, the disease is no longer considered a significant problem. Arkansas has discontinued its extensive case-finding program, but within the next few years it will survey former high-incidence areas to see whether the disease has actually been eradicated. In southern Illinois, once an area of high incidence, a marked decline in the number of cases was observed between 1949 and 1953. No active cases have been re-

ported in the State since 1949. Kentucky discontinued its trachoma control program more than 4 years ago, and Oklahoma reports that the disease is now a negligible problem in areas where the incidence was once high. In Arizona and New Mexico, where an estimated 20 percent of the Indian population before 1938 was afflicted with the disease, a 1952 survey of the Indian reservation residents in all areas except Albuquerque found only 2.6 cases per 1,000 population.

With continued organized attack against this disease, it should be entirely wiped out in the United States in time. Cooperation of independent ophthalmologists in trachoma areas and constant effort to teach the affected people good health habits will aid in reaching this goal. An improved standard of living and a rise in the general socioeconomic status are factors of importance.

Table 2. Trachoma cases among patients of the Missouri Trachoma Hospital field clinics

Year	Total number patients	New and old trachoma		New trachoma	
		Number cases	Percent of patients	Number cases	Percent of patients
	St. Louis County				
1941	83	17	20.4	11	14.2
1942	0	0	0	0	0
1943	229	35	15.2	27	11.7
1944	368	95	25.8	42	11.4
1945	217	65	29.9	25	11.5
1946	382	85	22.2	21	5.4
1947	411	41	10.0	11	2.6
1948	0	0	0	0	0
1949	112	15	13.3	0	0
	Potosi, Washington County				
1945	135	62	45.9	35	25.9
1946	154	70	45.4	36	23.3
1947	90	64	71.1	30	33.3
1948	213	91	42.7	47	22.0
1949	244	140	57.3	58	23.7
1950	456	191	41.8	98	21.4
1951	780	241	30.8	108	13.8
1952	428	89	20.7	48	11.2
1953	159	54	33.9	8	5.0
	Eminence, Shannon County				
1945	268	59	22.0	25	9.3
1946	264	42	15.9	14	5.3
1947	130	11	8.4	3	2.3
1948	289	107	37.0	50	17.3
1949	106	51	48.1	16	15.0
1950	125	58	46.4	20	16.0
1951	442	74	16.0	36	8.1
1952	464	42	9.0	25	5.3
1953	395	21	5.3	6	1.5

What Treatment Is Given for Trachoma?

At the Missouri Trachoma Hospital and generally in this country, the infection is treated with sulfonamide medications. Sulfonamide solutions are used as drops in the eyes several times daily, and sulfonamide tablets administered orally and sulfonamide ointments used nightly are adjunctive therapeutic measures. If the infection is in the early stage, treatment may be completed in approximately 3 weeks; if it is of long duration, treatment may last as long as 2 or 3 months, or even longer if the disease has become established.

Sulfonamides have been used to treat trachoma since about 1938, and most authorities agree they are active against the trachoma virus. More recently, the antibiotics have been used with favorable results in some instances. In the experience of this writer, the sulfonamides have proved more effective than any other therapeutic agents, the antibiotics appearing to be of secondary help (*37*).

Of the antibiotics, terramycin and possibly aureomycin seem to be most active against the trachoma virus (*38–45*). Chloramphenicol is considered much less effective, and penicillin, bacitracin, and streptomycin seem to be of little or no value in uncomplicated trachoma.

Mitsui (*43*, *44*) reports that in Japan both acute and chronic trachoma respond well to terramycin treatment; but he observes further (*45*) that while in his opinion sulfonamides may not be the best agents against trachoma in these days of antibiotics, they certainly constitute a means of treatment in those cases that do not respond to antibiotics alone. Loe, who first used sulfonamides successfully against trachoma in 1937 among the American Indians in the southwest (*46*), has stated that in his experience the antibiotics have not proved successful in the treatment of this disease in Arizona and New Mexico.

Cosgrove (*47*), director of the Arkansas State health program for trachoma control, believes that sulfonamides are the most effective agents against trachoma, and that the antibiotics, including the broad-spectrum group, have no effect against this disease.

Does Trachoma Tend to Recur?

Trachoma is a disease of recurrences and relapses. The infection may have become dormant or latent so that not infrequently an arrested case may later show signs of activity. A recurrence may be due to the patient's having returned to an environment of smoke, dust, or wind, or to a mode of living not conducive to eye health.

Recurrences sometimes result from insufficient or inadequate treatment and occasionally from trauma, scarring, or possibly allergy. Some recurrences, of course, are due to reinfection from a member of the family who has not had treatment. All family members should be examined when trachoma is found to be present in one of them.

Is There a Definite Criterion of Cure?

As yet there is no definite criterion of cure in trachoma. However, a combination of all the negative signs—quiescence of inflammation, deturgescence of the pannus, resolution of the follicles, a smooth, pink conjunctiva with or without cicatrices, absence of inclusion bodies—indicates that the disease is arrested. Without any one of these signs, the patient cannot be considered cured, even if no active lesion is present.

Thygeson (*48*) points out that, when confronted with the problem of distinguishing healed trachoma from trachoma of low activity, microscopic examination is helpful only in a limited way. The finding of inclusion bodies indicates trachomatous activity, but inability to find them, even on repeated examination, does not necessarily mean a lack of a trachomatous activity.

Is There a Worldwide Clinical Pattern?

Although the cardinal signs of trachoma (follicle formation, pannus, cicatrization, and the presence of inclusion bodies) are universally accepted, the disease varies considerably in different parts of the world and would therefore seem to be polymorphic. According to Lyons (*49*), trachoma may show variations in any of the following factors: (*a*) mode of transmission, (*b*) average age of onset, (*c*) clinical course and the resultant disability, (*d*) conditioning effect of secondary infection, (*e*) incidence of inclusion bodies at various stages of the disease, and (*f*) response to treatment with sulfonamides and antibiotics. Reports from workers in different countries illustrate some of these variations.

Lyons (*50*) states that in Egypt trachoma in its active stages causes surprisingly little disability; that gross thickening of lids is rare and the pannus seldom encroaches on the pupillary zone; and that photophobia and lacrimation are usually minimal and often absent. He adds that it usually is only the corneal lesions caused by neglected trichiasis in the late stage of the disease which lead to any serious reduction in vision.

Mitsui (*45*) of Japan declares trachoma to be an acute disease in its initial stage without exception. MacCallan (*51*) states that in Egypt and in eastern Europe, trachoma begins always with an inflammatory stage that continues for some time, but that in England the onset of trachoma in an acute or subacute form rarely occurs. He states further (*13*) that unmixed trachoma is always a chronic disease; that when it commences with acute manifestations or exhibits acute exacerbations, these are the result of superadded infections. Postic (*52*) of Yugoslavia observes that Mitsui's statement that all trachoma is acute in the initial stage must be taken to mean that such is the case in Japan, but not necessarily everywhere.

Gradle (*6*) states that trachoma in the United States varies somewhat with the characteristics of the population and the degree of sanitation present, but that entirely lacking is the onset of acute trachoma associated with ophthalmia, as seen so universally in Egypt. Lavery (*53*) states that in Ireland the disease usually starts insidiously, and that he has never seen an attack of acute trachoma. He reports, however, that

he has observed attacks of acute conjunctivitis superimposed upon trachoma.

In Missouri, trachoma is usually a chronic disease, progressing slowly over a long period of time; acute trachoma may occur, but only occasionally. In my experience, the disease takes from one to several months to show early clinical signs after contact with a known infection has taken place.

Birch-Hirschfeld (*11*) believes that the first stage of trachoma with its inflammatory infiltration passes early and imperceptibly into the stage of scarring and that the follicles are not of essential importance for the progress of the disease; that they are found both in early and late trachoma and are usually invaded and broken up by strands of fibroblasts.

The first appearance of the follicles on the conjunctiva may vary as to location. MacCallan (*13*) notes that in Egyptians the granulations appear first on the tarsus, but in Europeans, in the cul-de-sac (retrotarsal fold of the conjunctiva). Fuchs (*12*) states that papillary hypertrophy is a predominant feature of the tarsal conjunctiva, and that the retrotarsal fold is the seat of formation for trachoma granules. Among the white population of Missouri, it is in the retrotarsal fold that follicle formation is most pronounced and where the follicles first manifest themselves. When trachoma is seen in the florid form, however, a generalized follicular distribution throughout the conjunctiva of both tarsus and fornix in both the upper and lower lids is found.

In many, but not all, parts of the world, trachoma is frequently complicated with secondary infections, commonly the Koch-Weeks bacillus and the gonococcus (in epidemic and endemic form), and less frequently the Morax-Axenfeld diplobacillus and the pneumococcus. The associated infections greatly affect the clinical picture as well as the prognosis and the infectivity of the disease. Nataf (*54*) of Tunisia includes trachoma with secondary infections always; he believes that pure trachoma exists very rarely and that numerous infections are very often associated with it, the trachoma itself constituting the basic disease, the endemic and epidemic characteristics of which are conditioned by related disorders.

Do Associated Infections Affect Treatment?

Most authorities agree that the associated infections of trachoma have a conditioning effect on treatment. Lyons (*50*) states that antibiotics usually produce rapid and striking improvement in secondarily infected cases and have little or no immediate effect in uncomplicated trachoma. Bietti (*39*) points out that sulfonamide and antibiotic treatments may give different results according to the country in which they are administered. In Egypt, for instance, where associated infections are the rule, the response to treatment by various sulfonamides and antibiotics may well depend on the conditioning effect of these infections, as well as perhaps on other factors. Pages' (*55*) survey of experiments has shown that the trachoma-bacteria complex is characterized by a kind of mutual stimulation on the part of the associated micro-organisms, or, in other words, a synergic attack. In the United States, where the complicated trachoma common in Egypt is seldom seen, sulfonamides have generally produced more favorable results than the antibiotics (*37*).

Summary and Conclusions

Trachoma is a disease that may vary considerably in different parts of the world. Its clinical phase may be conditioned by climate, environment, associated infections, race, and general health and living conditions. From a worldwide point of view, therefore, both sulfonamides and antibiotics are useful in therapy, although sulfonamides have been found more effective in the United States.

There is definite need for research on the serology and immunology of this disease and on its causative agent or agents. In this connection, a more simple and more direct diagnostic laboratory test would be of infinite value in making an early diagnosis. A more clearly defined clinical picture of trachoma as it occurs in various regions of the world would make it possible to correlate better the results of chemo-antibiotic treatment. A universally accepted classification of trachoma would help clarify many questions of medical, administrative, investigational, and international character.

Although trachoma has been virtually eliminated from many areas of the world, the job of complete and universal eradication is not yet accomplished. The combined efforts of research, mass therapy, and preventive measures, however, are producing increasingly favorable results. New facts and new ideas in trachomatology are being brought to light and are being set forth in the literature. These reports help to define the disease, to recognize its variations, to make possible early diagnosis, and to determine the therapeutic methods most suitable for coping with it regionally.

The outlook today for a worldwide attack on trachoma is more encouraging than ever before, particularly because of better understanding between ophthalmologists and trachomatologists here and abroad; and because, too, of greater recognition by governmental authorities of the importance of this disease in relation to the health, economy, and welfare of the affected people.

REFERENCES

(*1*) Duke-Elder, S.: Text book of ophthalmology. Ed. 1. St. Louis, C. V. Mosby Co., 1934, vol. 2, p. 1593.

(*2*) Sorsby, A.: The task of ophthalmological research. Brit. M. Bull. 1: 102–104 (1943).

(*3*) Moutinho, H.: Legislation internationale contre le trachome, projet d'unification mondiale. Rev. internat. du trachome 26: 3–65 (1949).

(*4*) Siebeck, R.: Trachoma in Europe and the Near East. *In* World-atlas of epidemic diseases. Hamburg, Falk-Verlag, 1952, pp. 79–80.

(*5*) Lindner, K.: Trachoma. *In* The eye and its diseases, edited by C. Berens. Philadelphia, W. B. Saunders and Company, 1936, p. 423.

(*6*) Gradle, H.: Trachoma in the United States of America. Rev. internat. du trachome 16: 143–145 (1939).

(*7*) Cosgrove, K. W.: Trachoma problems in Arkansas. South. M. J. 34: 1037–1040 (1941).

(*8*) Forster, W. G., and McGibony, J. R.: Trachoma. Am. J. Ophth. 27: 1107–1117 (1944).

(*9*) Bengtson, I. A.: Question of the rickettsial nature of trachoma. Am. J. Ophth. 23: 770–779 (1940).

(*10*) Thygeson, P.: The nature of the elementary and initial bodies of trachoma. Arch. Ophth. 12: 307–318 (1934).

(*11*) Birch-Hirschfeld: Pathology of trachoma. Rev. internat. du trachome 16: 110–112 (1939).

(*12*) Fuchs, E.: Text-book of ophthalmology. Duane Ed. 8. Philadelphia, Lippincott, 1924, pp. 454–456.

(*13*) MacCallan, A. F.: Trachoma and its complications in Egypt. Cambridge, Cambridge University Press, 1913, p. 55.

(*14*) Romero, E.: Mi experiencia en mas de cinco mil casos de trachoma. Arch. Soc. oftal. hispanoam. 9: 1107–1116 (1949).

(*15*) Taborisky, J.: Trachoma in northern Russia and in southern Palestine. Rev. internat. du trachome 16: 201–208 (1939).

(*16*) Ching, R.: A new trachoma concept. A. M. A. Arch. Ophth. 51: 750–761 (1954).

(*17*) Rice, C. E., and Smith, J. E.: Trachoma in Missouri. J. Missouri M. A. 29: 13–17 (1932).

(*18*) Julianelle, L. A., and Smith, J. E.: A statistical analysis of clinical trachoma. Am. J. Ophth. 26: 158–166 (1943).

(*19*) Mitsui, Y.: Acute trachoma. Rev. internat. du trachome 29: 323–325 (1952).

(*20*) Cuenod, A., and Nataf, R.: Le trachome. Paris, Masson et Cie., 1930.

(*21*) Cuenod, A., and Nataf, R.: Biomicroscopie du pannus trachomateux au debut. Arch. d'opht. 48: 737–742 (1931).

(*22*) Nataf, R.: Le trachome. Paris, Masson et Cie., 1952.

(*23*) Kuo, P. K.: Incipient pannus in early diagnosis of trachoma. Am. J. Ophth. 29: 645–653 (1946).

(*24*) Tabone, V.: Anti-trachoma campaign in Gozo (Malta). Rev. internat. du trachome 29: 56–57 (1952).

(*25*) Rice, C. E., Sory, R., Smith, J. E., Faed, P. E., and Drake, A. A.: Effect of diet and vitamins on trachoma. Am. J. Ophth. 17: 735–741 (1934).

(*26*) Stucky, J. A.: Observations and experiences with trachoma in eastern Kentucky. Tr. Am. Acad. Ophth. 35: 217–224 (1930); Eye, Ear, Nose & Throat Monthly 9: 455–457 (1930).

(*27*) Glickson, J.: Observations on the trachoma problem. Am. J. Ophth. 33: 616–617 (1950).

(*28*) Murray, N. L.: Trachoma in South Africa. South African J. Clin. Sc. 4: 119–203 (1953).

(*29*) Bietti, G. B.: Il tracoma. Rome, Sanite Publica, 1947.

(*30*) Wilson, R. P.: Trachoma: A selection of personal observations and experiences. Giza Memorial Ophthalmic Laboratory, Report No. 14. Cairo, Egypt, The Laboratory, 1939–1944, pp. 24–25.

(*31*) Bietti, G. B.: Le trachome; vue d'ensemble des travaux de la période de guerre et d'après guerre (Trachoma; summary of the literature of the period of the war and after the war). Bibl. ophth. Basel No. 58, pp. 232–333.

(*32*) Bietti, G. B., and Cavara, V.: Le manifestazioni oculari delle mallatie da virus e da rickettsie. Bologna, L. Cappelli, 1952, p. 184.

(33) Rice, C. E.: Trachoma in the native white population of the United States. Sight-Saving Rev. 3: 105–114, (1933).

(34) Mann, I.: Ophthalmic survey of the Kimberley Division of Western Australia. Perth, W. H. Wyatt, 1954.

(35) Williams, R. C.: The United States Public Health Service, 1798–1950. Washington, D. C., Commissioned Officers Association of the United States Public Health Service, 1951, pp. 286–295.

(36) Siniscal, A. A.: Trachoma in Missouri. Arch. Ophth. 42: 422–437 (1949).

(37) Siniscal, A. A.: The sulfonamides and antibiotics in trachoma. Am. J. Ophth. 35: 671–683 (1952).

(38) Antibiotics in trachoma—Bibliography. WHO/Trachoma/8. Geneva, World Health Organization, 1951.

(39) Bietti, G. B.: Treatment of trachoma by various antibiotics and chemotherapy. WHO/Trachoma/17. Geneva, World Health Organization, 1951.

(40) Fernandez, P.: Aureomycin in the therapy of trachoma. Arch. Soc. oftal. hispano-am. 13: 79–99 (1953).

(41) Freyche, M. J.: Chemotherapy of trachoma. Bull. World Health Org. 2: 523–544 (1950).

(42) Naccache, R.: Terramycin in trachoma. Brit. J. Ophth. 37: 106–108 (1953).

(43) Mitsui, Y., and Tanaka, C.: Terramycin, aureomycin and chloramphenicol in the treatment of trachoma. WHO/Trachoma/2. Geneva, World Health Organization, 1951.

(44) Mitsui, Y., and others: Terramycin in the treatment of trachoma. WHO/Trachoma/9. Geneva, World Health Organization, 1951.

(45) Mitsui, Y.: Use of the new antibiotics in the treatment of trachoma. WHO/Trachoma/16. Geneva, World Health Organization, 1951.

(46) Loe, F.: Sulfanilamide treatment of trachoma. Preliminary report. J. A. M. A. 111: 1371–1372 (1938).

(47) Cosgrove, K. W.: Local use of sulfanilamide in trachoma. Am. J. Ophth. 23: 911–913 (1940).

(48) Thygeson, P.: Criteria of cure in trachoma. Rev. internat. du trachome 30: 450–462 (1953).

(49) Lyons, F. M.: Observations on the international coordination of research in trachoma. WHO/Trachoma/4. Geneva, World Health Organization, 1951.

(50) Lyons, F. M.: Dual problem of acute ophthalmia and trachoma in Egypt. WHO/Trachoma/20. Geneva, World Health Organization, 1951.

(51) MacCallan, A. F.: The initial signs of trachoma. Rev. internat. du trachome 27: 112–117 (1950).

(52) Postic, S.: Comments on document WHO/Trachoma/16; "Use of the new antibiotics in the treatment of trachoma" by Dr. Y. Mitsui. WHO/Trachoma/27. Geneva, World Health Organization, 1951.

(53) Lavery, F. J.: Incidence and clinical type of trachoma in Europe. Rev. internat. du trachome 16: 137–143 (1939).

(54) Nataf, R.: Organization of control of trachoma and associated infections in underdeveloped countries. WHO/Trachoma/19. Geneva, World Health Organization, 1951.

(55) Pages, R.: Role of seasonal acute conjunctivitis in the development of trachoma. WHO/Trachoma/7. Geneva, World Health Organization, 1951.

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STOP RHEUMATIC FEVER

Health Education Unit

A film, a discussion guide, and a general information booklet and folder make up the new health education unit recently released as part of the "Stop Rheumatic Fever" campaign being conducted by the National Heart Institute of the Public Health Service and the American Heart Association.

The unit provides materials for use in State and community programs for the prevention of rheumatic fever—a leading cause of disability and death in childhood and producer of heart damage in children, adolescents, and young adults. The materials are based on medical recommendations for preventing rheumatic fever. These recommendations were drawn up by the American Heart Association's Council on Rheumatic Fever and Congenital Heart Disease and were published in the April issue of *Public Health Reports*, p. 373.

Done entirely in animation with much human interest appeal, the film symbolizes rheumatic fever as a smoky flame which sometimes flares up, sometimes lies almost dormant—the character of the disease itself. Streptococcus infections that come from the germs which cause sore throats, tonsillitis, scarlet fever, and some other diseases are symbolized as the forerunner of rheumatic fever.

The guide provides a synopsis of the film. It suggests pertinent remarks for the user to make before showing the film, including a sample 2-minute introduction. Delineated are important points to be emphasized in discussion after the film is shown. Information useful in answering audience questions and sources for further information are given.

The booklet offers a condensed version of the film content and is illustrated with pictures from the film. It provides information about streptococcal infections and on what to do about them to prevent rheumatic fever. It is useful for distribution to film audiences to aid in retention of content and for future reference and also as educational literature in general health information and rheumatic fever programs.

The folder describes rheumatic fever and its association with a preceding streptococcal infection. It helps parents to know when to call a physician and what to tell him about their child's sore throat. It contains a chart of questions on signs and symptoms, helpful in determining whether or not a child has a "strep" sore throat. Affirmative answers indicate the need to call a physician promptly.

FILM. Stop Rheumatic Fever. 16 mm., sound, black and white, 12½ minutes, 1955. Prepared by National Heart Institute, PHS. Produced by Transfilm, Inc. Cleared for television.

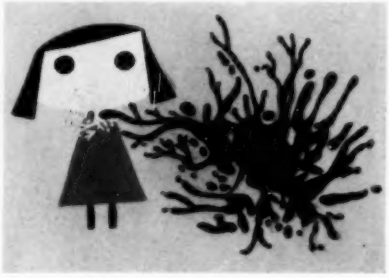
Audience: General public. Suitable for showing before parent-teacher groups, in the classroom, community health meetings, luncheon clubs, and other similar meetings. On television may be used as complete presentation, or preliminary to a physician's talk or other discussion.

Available: Purchase—American Heart Association Film Library, 13 East 37th Street, New York 16, N. Y. Price $15. Rental distribution not being made since purchase price is so low.

DISCUSSION GUIDE. 4 pages. Copy accompanies each print of the film. Single free copies obtainable from American Heart Association, 44 East 23d Street, New York 10, N. Y., or from local heart associations.

BOOKLET. Stop Rheumatic Fever. Public Health Service Publication No. 420. 1955. 16 pages. Single free copy accompanies film. Additional copies obtainable from the National Heart Institute, Bethesda 14, Md. Quantities may be purchased from Superintendent of Documents, Washington 25, D. C., at $4.00 per 100.

FOLDER. Now You Can Protect Your Child Against Rheumatic Fever. Free copy accompanies film. Additional copies available from the American Heart Association, 44 East 23d Street, New York 10, N. Y., or local heart associations. Quantities are $1.65 per 100.



An octopus-like representation of the streptococcus germ, closely resembling its microscopic appearance.

A Rural Sanitation Program

—Lancaster County, Nebraska—

By LESTER A. SANGER, C.E.

THE DEVELOPMENT of rural sanitation programs has followed at quite a distance the development of sanitation programs in urban and fringe areas of relatively high population density. This is an understandable pattern assuming that the magnitude and importance of environmental sanitation problems are directly proportionate to the population density. However, the isolation of rural villages and farm homes is rapidly fading, and the rural population now contributes measurably to the environmental health problems of a region.

There are many ways to develop a rural sanitation program, and it would be improper to draw any inference that the procedures in Lancaster County, Nebr., are necessarily a model for others to follow. The procedures may, however, contribute to the planning of programs in similar areas.

The prelude to the sanitation program in Lancaster County was the reorganization of the health department.

Community Profile

Lancaster County covers 864 square miles of gently rolling farm land and has 21 small towns, 6 of which range in size from 200 to 450 people. Exclusive of the city of Lincoln, with a population of approximately 100,000, the county has a population of about 20,000. The people are of German, Bohemian, Dutch, Russian, Irish, and English descent. There are 80 rural schools and 15 consolidated town schools.

During 1945 and 1946 the Lincoln City Health Department was reorganized to meet the standards of a modern full-time local health unit. This involved the addition of professional public health personnel to the staff and major revisions in the organization and activities of the department.

The civic groups that were instrumental in the modernization of the Lincoln City Health Department, chiefly women's organizations, joined hands with their rural counterparts and began to "beat the drums" for the organization of a combined city-county health unit. They recognized the desirability of extending health services to the fringe areas surrounding Lincoln and, indeed, to the entire county.

Meetings with numerous civic groups and rural organizations were followed by public hearings conducted by the board of county commissioners during the winter of 1946–47. These public meetings were interesting demonstrations of democracy in action. It was conspicuous that the decisive force for the organization of the combined city-county unit came from several women leaders in the community and the organizations they represented. The

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Lincoln-Lancaster County Health Department became a reality July 1, 1947.

The Rural Sanitation Program

A preliminary survey of the county revealed that the geographic distribution of environmental sanitation problems could be classified into four main groups:

1. Fringe areas adjacent to Lincoln.
2. Town areas (including the usual problems of food sanitation, private sewage disposal, water supplies, insect and rodent control).
3. Farmstead sanitation (water and sewage).
4. Schools (rural and town).

The Lincoln-Lancaster health department chose to launch the rural sanitation program through the medium of a school sanitation program. It would permit the department to distribute a service uniformly throughout the county. Many sanitary improvements in the school environment were needed, and the county superintendent of schools was not only the respected authority throughout the rural school system, but also he was influential within the family of county officials.

During that first school year, the rural sanitarian made a complete survey of all rural and town schools. The survey consisted of checking on the standard items of school sanitation: water supply, toilet facilities, school lighting, and so forth.

In most schools the survey was conducted as an educational experience for the teacher and children, especially in the one-room rural schools. At every opportunity the sanitarian stressed the importance of a safe school water supply and sewage disposal system, and emphasized that the same applied to their own farm wells and toilet facilities.

Long before the survey of all schools was completed, the health department began receiving requests to talk at Grange and parent-teacher association meetings. These meetings provided the opportunity to introduce the parents to public health in general, to the services we could give for the asking, and, in particular, to specific details of safe farm water supplies and sewage disposal systems. The meetings followed a somewhat standard form—formal presentation of the material supplemented with a short movie on some aspect of public health and followed by the customary informal discussion.

These informal gatherings and the free discussions that followed were of great value in helping the sanitarian to get personally acquainted with many people and facilitated release of the typical reserve of rural midwesterners.

Requests for participation in these rural meetings soon overburdened the rural sanitarian, and it became necessary to obtain assistance from other members of the staff, notably the public health educator and public health nurses. Many requests for speaking engagements and technical services were received through the county extension agent. The county agent contributed as much as, or more than, any other individual to the introduction of health services among the rural populace. He contributed further to the program by donating the first set of septic tank forms.

By November 1947 we were getting calls from all over the county for technical assistance in planning the layout of septic tank systems and for advice on how to improve private water supplies.

Septic Tank Installations

The demand for septic tank installations made it necessary to build two more sets of forms. We built one set and induced a local lumber company to build a set. For each use of the forms, we charged a rental fee of $5.00 to cover maintenance and replacement of forms.

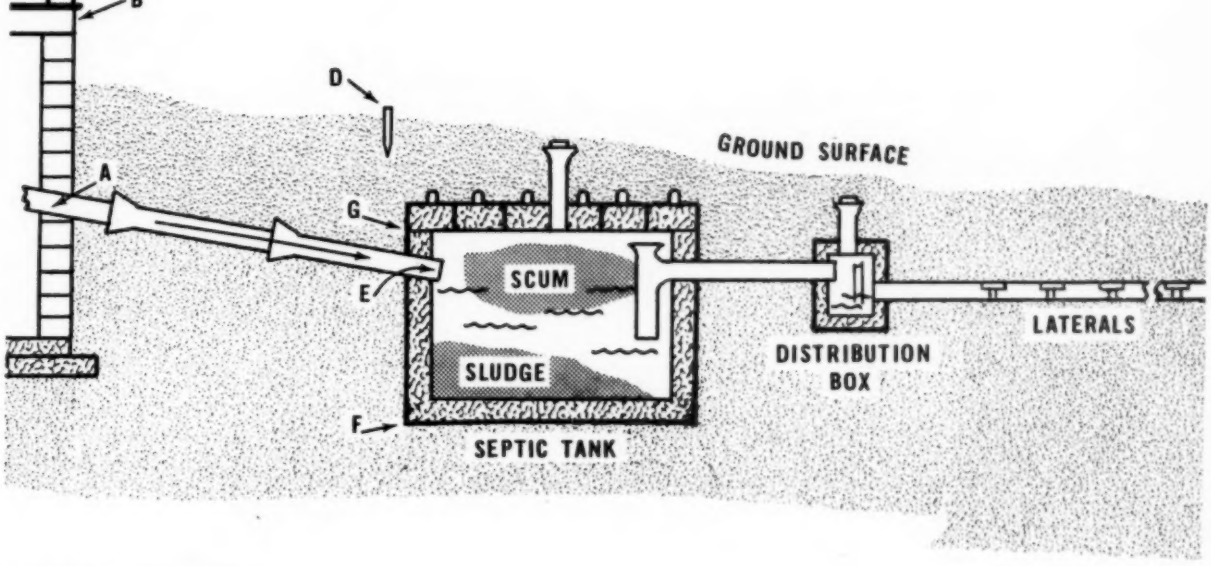
Each request for assistance was handled approximately as follows:

1. A date was set for the sanitarian to visit the home, lay out the system, and explain to the farmer what materials he needed to make the installation.
2. On the day the ready-mixed concrete was to be delivered for the tank and distribution box, the sanitarian was there several hours ahead of delivery time to make a final check on the setting of the forms, construction aids, and other details. The sanitarian on these occasions was not dressed to attend a wedding. I mention dress-

Figure 1. Septic tank work sheet.

Definition of Points

A. Point at foundation where house plumbing must leave the building in order to provide slope of 1/4" per foot in sewer line to septic tank. (May vary 2" up or down.)
B. Reference point marked on side of building.
D. Grade stake at ground surface at site of septic tank.
E. Center of sewer line entering septic tank.
F. Point at bottom of septic tank excavation.
G. Point at top edge of septic tank wall.



NOTE TO PLUMBER:

The house sewer pipe must leave the building at point A (2" + or −) which is _____ ft., _____ in. below point B marked on outside of house. The center of discharge end of sewer to septic tank (E) must be _____ ft., _____ in. below grade stake D (2" + or −).

NOTE TO SEPTIC TANK CONTRACTOR:

The tank is to be located _____ ft. from dwelling.
The hole for septic tank must be dug to a depth (D–F) of _____ ft., _____ in.
The top edge of form (G) must be _____ ft. _____ in. below grade stake D.

NAME _____ PHONE _____

ADDRESS _____ OWNER _____

REMARKS:

LINCOLN CITY-LANCASTER COUNTY
DEPARTMENT OF HEALTH

DATE _____

_____
Sanitarian

Form S–600, Sept. 53.

ing appropriately as much because of the unheralded public relations significance as provision against construction errors. The sanitarian usually remained at the site until the concrete was in place.

In planning the installation, the sanitarian chose the location for the septic tank, distribution box, and disposal field. By use of an inexpensive surveyor's level ($54) he established a profile for the entire system. After establishing the profile, he filled out in duplicate a septic tank work sheet (fig. 1). One copy was given to the farmer and the other was placed in the office files for possible future reference.

Many modifications of the features shown in figure 1 were used, but, generally, they have been installed with a house sewer slope of ¼ inch per foot, free discharge into the tank, no baffles, 3-inch drop in flow-line between tank inlet and outlet, T-connection on effluent line, 500-gallon concrete tank with sectional cover slabs, observation ports in septic tank cover and distribution box cover, depth of liquid in septic tank of 4 feet, distribution box provided with baffle and several standby discharge openings (plugged), and 3 to 6 separate tile lines for disposal field.

One noteworthy modification of the tile field used occasionally is an installation we have called an "under-drain system." It consists of two levels of drain tile separated by 24 inches of gravel, the lower-level tile discharging into a stream or ravine ultimately seeking disposal by way of natural surface drainage. The idea is not new, but our experience indicates that this is a very satisfactory method in cases where, due to soil density, ground water, or space limitations, conditions do not favor the standard tile system.

The health department has installed approximately 200 concrete septic tanks with its forms and has supervised at least another 100 systems using poured-in-place concrete, precast concrete, tile, or metal septic tanks. Many of the systems have been revisited to see how well they work and to check on certain technical details.

During a check of several systems in January 1950 (2 years following installation), tanks that had little or no protective earth covering were particularly noted. Although the winter temperature had averaged 18° F. for more than a month, the temperature of sewage in tanks with concrete cover slabs exposed, averaged 41° F. A distribution box with only a loose piece of canvas as a temporary cover showed a liquid temperature of 38° F.

Another significant observation was the relatively larger volume of scum than is indicated in the literature on septic tank operation. In most installations the depth of scum was equal to sludge depth, and in some the scum depth exceeded sludge depth. Probably, the primary contributing factor is the higher percentage of animal fats and greases that the farm home discharges in its sewage, and to this extent, at least, domestic farmstead sewage is different from urban sewage.

In all of the installations, the influent sewer pipe terminates approximately 1 inch beyond the inside face of the septic tank wall and discharges the incoming sewage by free fall. In spite of the extensive buildup of scum, in no case was any obstruction to the incoming sewage observed.

From these observations, the sanitarian has concluded that the following principles of septic tank construction in this area are sound.

1. With a minimum of earth covering, there is no reason to fear freezing in septic tanks, distribution boxes, or tile fields.

2. More consideration should be given to sludge storage capacity in tanks serving rural homes; any baffling that would restrict sludge storage capacity is considered detrimental.

3. Free-falling influents are totally satisfactory operationally, simple to construct, less expensive, and facilitate maintenance of the house sewer.

Peeking into the digestion chamber and bowels of an operating septic tank system may lack esthetic appeal even for conscientious sanitarians, but these explorations were of great value in reinforcing junior sanitarians' confidence in the accepted principles of septic tank sewage disposal systems.

Private Water Supplies

Requests for help in improving private water supplies throughout the county paralleled requests for aid in installing septic tanks. In private water supply improvements, above-

ground installations using some of the established principles of good well construction were stressed, and many improvisations were used.

Although Lancaster County does not have all types of surface geological formations influencing problems in well construction, there are enough of them to tax the sanitarian's inventiveness. One of the most unique problems is the scattering of underlying salt beds. To avoid these salt water horizons, we often called on the State geologist to help locate new wells. The source of ground water in Lancaster County is, for the most part, obtained from the mantle-rock of unconsolidated glacial drift. The salt water horizons giving trouble in relatively shallow private wells generally occur along the valleys of Salt Creek and its main tributaries. Salt Creek, running diagonally across Lancaster County from southwest to northeast, is the major stream in the county. Also, in some areas of the county there are pockets of impervious shales and clays, yielding their entrapped water with extreme reluctance.

Due to these geological restrictions and the cost of drilling new wells, the greatest challenge was to rehabilitate existing wells. Except in wells requiring only the elimination of well pits, most of the rehabilitation work dealt with tile-cased and dug wells. With few exceptions these wells were altered by replacing the existing upper 10 feet of tile casing or well wall with 4- or 6-inch diameter steel well casing.

The program of improving farm water supplies was on a voluntary or promotional basis. Consequently, there were no inhibiting restrictive regulations in making these improvements. In private wells, there is at least as much individuality as with human fingerprints, and the great variety of unorthodox but extremely practical techniques a resourceful sanitarian can use in improving farm water supplies is remarkable. The sanitarian has used so many old cultivator wheels, windmill sway-bracing, hog fencing, and the like, in rural sanitation work that he has difficulty interpreting the neat drawings normally attached to approved standards and regulations.

Another complicating factor in the private well improvement program was the occasional occurrence of excessive nitrate nitrogen (NO_3–N_2) in wells. Several cases of infant cyanosis (methemoglobinemia) were reported, and investigation revealed that high nitrate nitrogen in private well water supplies was the causative agent. A complete analysis of this problem would constitute a separate report, but the following comments are considered sufficient as a summary here.

In a group of 30 wells showing nitrate nitrogen concentrations in excess of 10 p.p.m., ranging from 10 to 108 p.p.m., construction alterations to prevent entrance of surface contamination into the wells have effectively reduced the objectionable nitrate nitrogen. Although numerous articles on the subject suggest that nitrate nitrogen is, in some cases, indigenous to a particular aquifer, our experience in Lancaster County strongly indicates that high nitrate nitrogen in well water is due to either a direct short circuiting of surface contamination into the well, or a recent indirect zonal contamination of the aquifer. Partial chemical analyses on investigated private water supplies have become somewhat routine along with the sampling for bacteriological analyses. This activity of the program is considered a good example of teamwork between the public health nurse, the health officer, and the sanitarian.

Local well drillers are, of course, an indispensable part of the well improvement program. Well drilling is characteristically an inherited craftsmanship, and unfortunately some of the old well drilling practices are not in harmony with present day standards of sanitation. It requires more than a little tact and perseverance to convert the well driller to these new ideas; to question his methods is tantamount to insulting his grandfather. In spite of these inherent characteristics, it is essential to indoctrinate the local well drillers with good sanitary practices. If this is properly accomplished, sanitarians will soon discover many new wells of good construction on which they were not even consulted.

Town Water Supplies

When the rural sanitation program was started, only one of the four town water supply systems was an approved above-ground instal-

lation. All pits have now been eliminated and in other respects altered to comply with State health department regulations.

These improvements were accomplished by a combination of techniques—repeated visits with town officials, attendance at council meetings, insistence on frequent sampling and analyses of their supplies. Also, we were opportunists. In one town, complaints of tastes and odors from residents necessitated major repairs to an oil-lubricated vertical turbine pump, and the town officials were convinced that other improvements might just as well be made at the same time. In another town, a spring flood gave us an assist. While muddy flood waters were still knee deep in the town pump house, the sanitarian invited the town water commissioner to wade out with us to see how things looked. It wasn't good. A series of samples showing evidence of contamination helped us on the third well.

In addition to improving existing town wells, three other towns have been induced to construct water supply systems. As in the case of town well improvements, these new water supply systems were the culmination of executive and public meetings with town boards reinforced with survey data on contaminated private wells and the mingling of private sewage disposal systems with private wells. These three new town systems are of the same basic design: 6-inch steel cased well, vertical turbine pump, pressure tank—all housed above ground in a neatly constructed pump house (fig. 2). They have a cast iron distribution system with fire hydrants. The average population of these towns is 170 people.

Rural Food Establishments

At the time of meeting with town boards to discuss water supplies, the sanitarian also requested permission to inspect local taverns and cafes. It was considered essential to contact town officials before entering the eating and drinking establishments. With the exception of taverns, our program of food establishment sanitation has not been on an enforcement basis. By resolution of the city-county board of health, the same general sanitation regulations of the Lincoln food ordinance, patterned after the

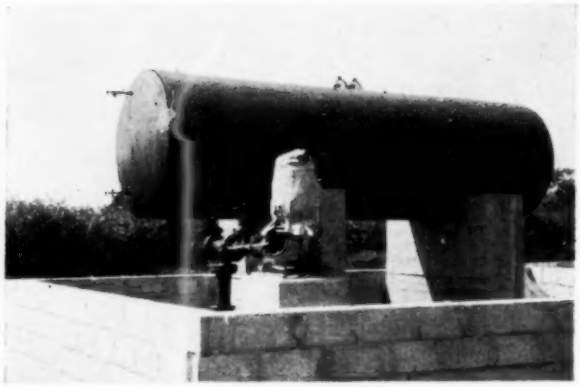


Figure 2. New town well prior to construction of pump house.

Public Health Service Ordinance and Code, are to apply to food and drink establishments elsewhere in the county. On rare occasions, the health department has appealed to the town boards to help in getting corrective action.

Taverns are issued licenses by the State liquor commission through the county commissioners of the respective counties. We have a working agreement with our county commissioners whereby no license is approved until they have received a satisfactory sanitation report from our department. This has been very successful in gaining improved sanitation in these places, and there are seldom any difficulties with the operators.

Other Activities

There is opportunity to supply numerous other services in a rural sanitation program, some by request and others by promotion. As the services of the department became known throughout the county, we received many calls in the nature of nuisance complaints. Several spring floods afforded us the opportunity to give emergency service during the floods, and following floods we conducted spraying operations in towns as fly and mosquito control measures. We always made a special effort to be conspicuously present (sincerely) in all areas affected by the floods, even at the expense of being up at all hours of the night. Any town isolated by flood waters was contacted by phone to show our concern for the town well or private water supplies. The county commissioners purchased

a power sprayer for our use in spraying operations in the county. We have conducted town surveys on private sewage disposal facilities and in this way have induced incorporated towns to adopt more comprehensive sanitary codes.

In retrospect it seems that there are almost limitless opportunities to give worthwhile services in a rural sanitation program.

Summary

It is proper and requisite that local health services be expanded to include rural sanitation activities whenever local interest is favorable. Based on experiences in Lancaster County, Nebraska, the following generalized comments are submitted as possible guides in the development of rural sanitation programs in other areas.

1. Before launching a rural sanitation program, a careful study should be made of the sanitation problems, local prejudices, personalities, and attitudes. Keep in mind that it may not always be advisable to assault the problems of highest public health priority.

2. A rural school sanitation program is a convenient and effective way of introducing the rural sanitation program to the rural community. It results in a prompt demonstration of services, uniformly distributed over the area, and has a better than even chance of a warm reception.

3. Regular and periodic visits with key officials (county commissioners, superintendent of schools, town boards, county extension agent) is an essential rule of conduct.

4. Re-indoctrination of local well drillers is essential to the extension of properly protected private water supplies.

5. Installing properly constructed septic tank sewage disposal systems is the most demanding of all activities of the sanitarian's time and energy. Procedures for properly installing these systems should be streamlined as rapidly as possible; local contractors should be informed of the essential specifications and induced to do the work without direct supervision by the sanitarian.

6. To be successful, the rural sanitarian must like evening meetings with rural people. He must be friendly, sincere, and patient.

I am convinced that skillful application of the principles outlined are as essential to a successful rural sanitation program as technical knowledge of the sanitary sciences. Conducting a rural sanitation program is a rewarding and satisfying experience; it has no equal as a training ground for sanitarians, and no other activity in sanitation affords such an opportunity for the exercise of diversified talents.

PHS Exhibits

Diagnostic Techniques

Three exhibits—"Breath Sounds on Tape," "Heart Sounds on Tape," and "Screening for Diabetes"—specially designed for teaching devices and refresher courses may be borrowed from the Public Health Service.

Breath Sounds on Tape

Tape recordings of normal and abnormal chest sounds prepared by Dr. William B. Walsh of the Georgetown University Medical Center are synchronized with illuminated chest films in a 4½-minute cycle. The continuous tape may be heard through a bank of stethoscopic earphones or from a loud speaker.

Breath sounds on tape was exhibited at the 1954 scientific show of the American Medical Association in San Francisco.

The exhibit weighs 1,300 pounds and requires a booth 14 by 20 feet.

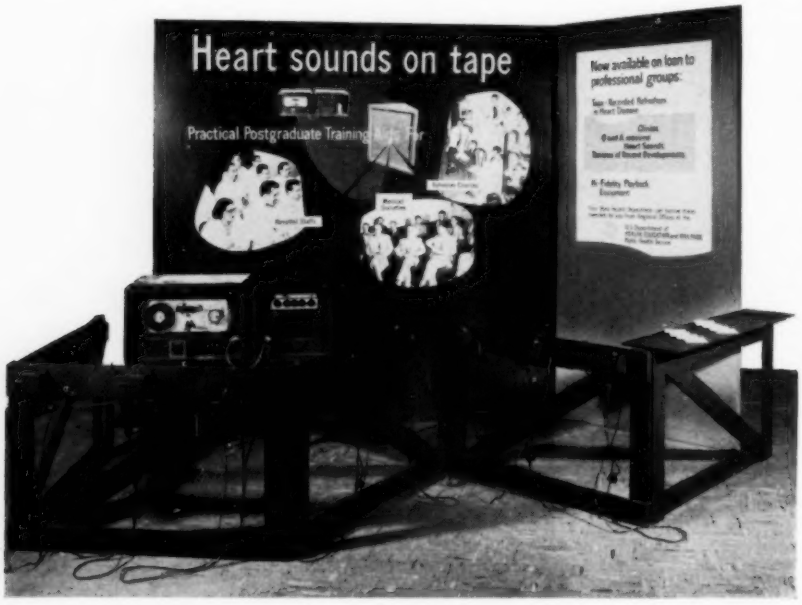
Heart Sounds on Tape

Recordings of heart sounds, prepared under the general direction of Dr. W. Proctor Harvey of the Georgetown Medical Center, have been used by the Public Health Service as an exhibit.

The exhibit with high-fidelity sound equipment offers a 5-minute sample of heart sounds with explanatory comment. These sounds may be heard with head phones or a loud speaker.

A full set of teaching tapes, which require about 4½ hours for the complete run, may be borrowed, together with the special playback equipment.

The exhibit weighs 1,400 pounds and requires a booth 14 by 20 feet.



Screening for Diabetes

An exhibit featuring a continuous three-dimension motion picture, in color and with narration, has been produced by the Public Health Service to demonstrate the Wilkerson-Heftmann method of blood screening for diabetes.

This true glucose screening test can be performed in the physician's office in about 5 minutes at a cost of about 15 cents.

Although the exhibit (including the film) will not be distributed generally, it is available for showing at national and State medical meetings.

A booth 10 feet deep and 20 feet wide is required for the showing. The exhibit weighs 681 pounds.

For information about these exhibits, write to the Division of Special Health Services, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.

Public Health Speaks

"Public Health, an institution of the people and for the people, needs to speak out, unafraid," states the program for the 43d annual session of the North Carolina Public Health Association which was held in Raleigh, September 23–25, 1954. Three of the several papers dedicated to this theme are presented here in brief form. A fourth, Where Do We Go From Here in Public Health? by Dr. Wilson T. Sowder, will be published in full in an early issue of the American Journal of Public Health.

Efficient Management In Health Departments

PHR brief

Continued progress in public health depends in part on research and increased knowledge in the health sciences, but of equal or even greater importance is the efficient application of the knowledge to meet the needs of the public.

Overall Administration

In this day when there is a tendency to look intently at overhead expenses of all agencies, some State boards of health seem inclined to dispense with State and district supervisory personnel and assign them as field workers. Some departments are discussing the idea of replacing registered nurses with licensed practical nurses, sanitarians with "inspectors," and health officers with lay administrators. Is this because of a real shortage of personnel and the fact that individual staff members are better trained and therefore need less supervision and management? Or is it because our management is so indifferent and inefficient that those in control of the money feel that it can be more effectively used by employing a larger staff of lesser trained and qualified personnel at lower salaries?

If the health officer is concerned only with the medical aspects of his job and pays little attention to efficient management of his staff and program, then the question may well arise, could not his full time be spent as a clinician and he be replaced with a qualified lay administrator? In small- and medium-sized health units of 6 to 8 employees, we should strive to have every member of the staff so well educated and trained as to require a minimum of supervision. In units with large staffs, it may be possible to save money by the use of lesser trained and qualified personnel, such as practical nurses, nurse aides, and inspectors, to carry on routine functions in clinics or to check on nuisance complaints. But when such personnel are to be used, it becomes mandatory to

By C. L. Guyton, M.D., M.P.H., assistant State health officer of South Carolina.

have well-trained and well-qualified supervisory staffs.

Recording and Using Health Data

Basic responsibilities of a health department are the recording and analysis of data on births, deaths, and notifiable diseases; maintenance of registers of individuals known to have certain diseases or disabilities; and the collection and interpretation of morbidity data from all available sources. Analysis of these records will frequently bring to light unrecognized health needs.

There is need not only for a record system that contains health data but for one that records activities of the staff and contains all the data that can and will be evaluated to the betterment of the service. Records should list such things as home visits, clinic attendance, and facilities inspected or surveyed. More important, they should tell what has been accomplished as a result of these activities. Such records will assist staff members in planning their day-to-day work, serve as a basis for program evaluation and revision, and become documentary evidence of work accomplished. But, before instituting a new record, always ask yourself, will it be useful and will it be used? A record that will serve only to collect data and dust should not be adopted.

Registers of persons known to have certain chronic diseases or impairments are usually kept and referred to with a great deal of pride by the administrator. Frequently, however, they are not put to good use because they are not analyzed and reviewed from time to time. A study of these registers will often show that certain diseases tend to be more prevalent in certain geographic areas or among certain social and economic groups. This should lead to an evaluation of that particular program to determine if it is meeting the needs of this particular area or group.

Health Education and Information

Every public health worker is engaged daily in health education. Every public health activity is, or at least should be, of health education value. Otherwise, the activity has been inefficiently performed.

However, we must also have a planned program of health education and information; otherwise, the community will soon take our activities for granted. Like any other program, this one must always have a definite objective. If we decide to stimulate or motivate the public through newspaper articles or radio or television programs, then these must be for a definite purpose. If a film is to be shown, it must be directed toward a definite educational goal. Classes should be well planned, and the teaching should be supported by all the educational media available.

Group teaching can save much time in giving basic information on diet, preparation of formulas for babies, operation of food-handling equipment, and the like. However, we should not forget the adage: "What I hear I forget. What I see I remember. What I do I know." This means that classes and group instruction will have to be supplemented with individual counseling and teaching regarding those activities that the individual must "know."

Fortunate is the health unit that has a trained health educator on its staff, for he is an expert in the efficient management of all the tools of health education. Every State department of health now has one or more health education consultants. They can be of great assistance not only in health education programs but in stimulating community interest in health activities and in planning the overall program of the local unit.

Supervision and Regulation

The laws of our States give health departments legal authority to supervise and regulate many activities in the field of health. If a department frequently finds it necessary to resort to legal action, then it is performing this responsibility in an inefficient manner. Health laws and regulations are usually established to set a standard and to serve as a starting point for the education of those concerned. Legal action to enforce them should be the last resort.

Is it not better to keep in touch with housing projects and to contact the development agency

early so as to inspect the site, test the soil, and agree on size of septic tanks, for example, than to wait until the buildings and tanks are completed and we are asked to make final inspection? We should prevent public health problems as well as disease.

Are we to continue our programs of inspecting dairies, food-handling establishments, and other institutions in a routine manner with a check sheet and grade card? When are we going to organize classes for operators and their staffs to educate them to operate their facilities properly and to assume responsibility for compliance with regulations? When are we going to include counseling as an integral part of inspection programs?

Direct Environmental Health Services

With the rapid advancement in health consciousness by the public and the rise in our economic level and general standards of living, many of the direct environmental health services are no longer required. They could be dispensed with if we educate the public regarding them sufficiently for individuals and families to assume more responsibility for the control of their environment. The efficient health department will engage only in those activities which require the use of trained public health personnel and which cannot be carried out by lay persons and groups.

Now that we have practically eradicated malaria, are we to continue a spray and fogging program to keep people comfortable? Or are we to educate the public that this activity is no longer a health measure and should be transferred to another agency?

Are we to keep on advocating the building of pit privies in rural areas when we know full well that even a trained health educator could not motivate you and me to use one in the cold gray dawn of a winter's day? Would it not be better to raise our vision from the lowly pit and observe the new power lines that have been extended into rural areas and to persuade the home owner to install an electric water pump, which eventually will lead to the installation of a plumbing system and proper sanitation of the entire home environment?

Personal Health Services

Improved sanitation and the use of modern drugs and treatment have markedly reduced the need for some of our immunization programs. If administration of personal health services is to be efficient, we must review our morbidity data and adjust our immunization programs to fit present-day community needs.

Are we to continue routinely to give typhoid inoculations to large groups of citizens now living in a sanitary environment, without a single case of typhoid over a period of years, just because we have trained them to submit to the annual roundup? Would it not be better if we analyzed the morbidity records and surveyed the environmental sanitation of the various communities and then limited such programs to areas where they are needed?

When are we going to stop limiting our rabies control program to the immunization of household pets and the vaccination of children and begin to attack the problem at its main source by preventing stray dogs from running at large in the community?

Are we going to continue to conduct chest X-ray surveys in which we routinely X-ray the same persons year after year, even though we find little or no tuberculosis among them? Would it not be better to concentrate on those communities and those social or economic groups which are less readily available but which would yield much higher dividends in cases diagnosed?

Are we going to continue inspecting school children by the thousands just because we have them congregated in an easily accessible place and wish to point with pride to a large number of individual services? When are we going to concentrate our activities on those pupils that have been screened out by teachers and nurses?

Operation of Health Facilities

We constantly preach efficiency in the operation of restaurants and schools and in the sanitation of homes and their environment, but, I ask in all sincerity, are we efficient in our health centers, auxiliary centers, and other places where clinics are conducted? Just because we use an auxiliary center a few hours once or

twice a week is no reason why the yard should be knee high in weeds and the surroundings like those of a deserted house. Buildings and surroundings should be neat and clean. A posted schedule of the clinics should be of sufficient size and so placed that it can be read by citizens passing in their cars.

Coordination of Activities and Resources

In addition to the efficient management of his staff, it is the administrator's responsibility to coordinate the work of his staff with that of all other community agencies concerned with health. It is true that details of the cooperation between various agencies can be carried out by junior members of the various staffs, but the top administrators should initiate and direct the overall coordination of work by their combined staffs.

Supplying all the health needs of a community is not the exclusive responsibility of the health department. It is a joint responsibility of the allied medical, nursing, and dental professions, voluntary health agencies, service clubs, official governmental agencies, and the citizens who are consumers of the services. Unless all these community resources are coordinated, there will be much inefficiency and unnecessary expenditure of both public and private funds.

One of the greatest helps in coordinating the work of community agencies is for the individual members of the health department to become real citizens of the community in which they live or work. Acting as private citizens but using the knowledge which they have as health workers, they can become leaders in all community activities pertaining to health. For this reason, I believe that health department personnel should be assigned permanently, or at least for a long period of time, to a specific geographic area. Such assignments will enable them to learn the needs of the area and to know the people intimately enough to counsel and work with them as community leaders.

Mothers and Children: How Shall They Survive?

PHR brief

Surveys in the field of maternal mortality show that much progress has been made in this country within the last 20 years. In 1934, 60 mothers died for every 10,000 live births. In 1954, less than 8 died. But there is still room for improvement. Intensive studies have shown that, despite the progress in reducing deaths, many of those mothers who did die should not have died.

How shall they survive? Programs which emphasize the importance of early and adequate prenatal, natal, and postpartum care are public health's first responsibility in this field. Where the need exists, direct services must be provided.

We take for granted that pregnancy is a normal physiological process; yet the need for continuous and adequate care throughout the gestational cycle is frequently overlooked. It is imperative that preparation for motherhood begin long before the baby is born. A program of salvage must include guidance in premarital and martial problems as well as measures relating to the physical and mental condition of the pregnant woman.

By L. R. Mezera, M.D., director of maternal and child health, Kentucky State Department of Health.

Emphasis on Early Care

Priority should be given to a program of educating women to seek medical care as early in pregnancy as possible. Early care is essential if the full benefit of prenatal care is to be realized. We must emphasize this point in all our educational activities, and where medical facilities are lacking, we should see that such education is available to the prospective mother.

Adequate prenatal care is also essential. It must include a complete history and physical examination followed by periodic examinations at stated intervals. The initial examination is not complete unless it includes a serologic test for syphilis and a determination of the Rh status. A chest X-ray is certainly highly desirable and perhaps should be mandatory. The mother must be encouraged to report any irregularities, and any untoward signs or symptoms must be explored immediately.

Nutrition Important

Recent research studies of nutrition and pregnancy point up the fact that nutrition means more than counting calories. These studies indicate that when the prospective mother's diet is good and deficiencies are corrected by supplements, the incidence of toxemia is lower than when nutrition is inadequate. They show that fetal and neonatal mortality rates and the incidence of premature birth are lower among mothers whose diet is adequate. They further point out that toxemias of pregnancy are more prevalent in women who are underweight than in those whose weight remains within average limits. To preserve the health of mothers and infants, a sound nutrition program must be promoted.

The prospective mother must be protected against syphilis and tuberculosis. A diagnosis of syphilis demands all our efforts to cure or arrest the disease; these efforts will, in turn, almost always protect the fetus. A diagnosis of tuberculosis demands close medical observation, supervision, and education throughout pregnancy and the removal of the infant from the maternal environment immediately after birth.

In view of what is known of the role of German measles during early pregnancy and its effect on the child, measures for the prevention of this disease must be instituted.

The Basic Program

The prime objective in maternal hygiene is the conservation of life and health of the expectant mother and her developing infant. This objective leads us to promote a program in which medical care is made available to every pregnant woman and in which she is persuaded to obtain care throughout the maternal cycle.

It is desirable that this service be provided by a single physician of the patient's choosing, but when unavailable in this way, the service should be provided through community facilities.

The seriousness of activating a program of maternal survival is accentuated by this fact: In any year of recent date, there were more deaths as a result of complications and sequelae of pregnancy than there were deaths from such communicable diseases as diphtheria, scarlet fever, poliomyelitis, meningitis, and typhoid fever. When one realizes that deaths related to pregnancy occur in only one period of life and in only one sex, the gravity of the situation is readily apparent.

Preventing Infant Deaths

The salvage of lives of infants and children within the last 25 years has been the major factor in the increase of life expectancy. Progress has been made in reducing mortality not only in the infant age group (0–1 year) but also in the later periods of childhood. Had mortality rates of a half century ago prevailed last year, approximately 1,000,000 children aged 15 years and under would not be with us today. However, little if any progress has been made in prevetning death during the first 28 days of life. The shorter the period of time after birth, the less marked has been the rate of decline in the death rate.

The causes of death in the newborn period are rather poorly defined, more so than in later infancy. Prematurity, congenital malformations, birth injuries, infection—these are the most frequently cited causes.

In a broad sense, we recognize certain hazards as contributing to infant mortality and particularly to neonatal wastage. Specifically, we recognize hazards of development and hazards of injury. We know that defects in development occur and that these may culminate in a monstrosity or congenital malformation. We also know that toxemia or an infection such as syphilis or influenza in the mother may exert its effect on the fetus. Mechanical injury to the

mother, injury to the infant incident to difficult labor, abortion—all these contribute to many preventable infant deaths. Exhaustion of the infant in trying to overcome an impassable barrier, injury to the cranial vault through injudicious use of forceps, and toxemic conditions in the mother further add to infant deaths, many of which perhaps are needless.

How shall they survive? Since factors contributing to early infant death, even fetal death, have their incipient stages in prenatal life, early and continuous medical supervision of the mother is as necessary for preventing infant deaths as for preventing maternal deaths. Constant medical observation of the mother permits detection of deviations or complications early enough for remediable measures to be instituted.

Medical supervision of the infant must begin immediately after birth. If conditions are favorable, the infant should receive a complete physical examination. Persistent medical and nursing observation should follow. In home deliveries it is imperative that the public health nurse be involved to the extent of postpartum visits. The nurse, however, is cautioned to refer her observations first to the family physician.

Although premature birth is recognized as a sign rather than a diagnosis, it is recorded as the greatest killer of infants. The premature infant is born saddled with the threat of death. But many premature infants can be saved. Properly equipped and staffed hospitals which provide proper management of a premature delivery will go a long way toward this end.

If none of the three major killers of the newborn—prematurity, congenital malformation, or birth injury—is involved, the next compelling duty is the prevention of infection. It is here that the public health nurse plays a major role. Through her efforts, the mother is stimulated to maintain early care and observation of her child.

Missed Opportunities In Tarheel Sanitation

PHR brief

In this era of expansiveness—bigger production, greater markets, tremendous planes, stupendous bombs—public health is not unaffected, and there are those in our ranks who cast ever about for this and that new world to conquer. Nor is such wholly to be abhorred; rather it is commendable, provided merely that the conquering is in order.

But it does pay, at times, to take stock; to see where we stand; to search out the failures and the missed opportunities in order to achieve improvement. Missed opportunities could be found in nursing or health officering or health educating—in any of the numerous public health persuasions. But it is sanitation shortcomings that will get the extra special treatment today. And have we here the makings of an epic, a saga of woe, a list of "it might have beens" the like of which Maud Muller never even dreamed?

By Millard B. Bethel, M.D., M.P.H., health officer for the city of Charlotte and Mecklenburg County, N. C.

Milk and Meat

At the front of the parade of bedraggled specters is the Tarhell milk supply, fittingly white and at times elusive, as becomes a proper ghost. But we can't even call this a near miss; we're wide of the mark a country mile. It is devoutly to be desired that someday milk sanitation will be placed with the State board of health where it belongs. But, lest my remarks be interpreted as the anti-agrarian rantings of a noncomprehending city clicker, let me add that I would urge the use of the "Federal Order" in those areas of the State where producer protection is required.

So it is with milk, and so it need not have been. Had we been more astute, the whole business could have been tucked neatly away by now.

And so it will be with meat one day unless we all face up to the situation. There has been an awful lot of awful meat foisted upon North Carolina consumers. We in public health are in large measure squarely to be blamed, and, sooner or later, we shall pay the penalty. It is not enough for us to have reasonably good, reasonably clean abattoirs—or even perfect ones, for that matter. Meat, and poultry, too, must have ante-mortem and post-mortem inspection. Yet, few communities are doing even a fair job; and none of us can claim credit for a good job when poultry is considered.

Unfortunately, shade-tree meat is even more common in North Carolina than is barnyard milk. Our job will not be done until we have made them both a rarity.

The people in my town and my county are neither better nor worse than in yours. What we see in the Queen City is fairly representative of what is going on elsewhere in the State. Adulterated and contaminated foods need ever to be guarded against. Some will always be avaricious enough to add water to milk, and where there's little chance of being caught chicanery will be rampant. And as long as Old Bossy is held more dear than the Old Gray Mare, some unethical entrepreneur will put horsemeat into hamburger. You might say these practices are largely fraudulent and hence not within the realm of sanitation. I contend they are both and that good local sanitarians backed by good local or regional laboratories can make it all a bitter memory for the errant, a triumph for decency, and another safeguard with which we ought to surround our people.

Stream Pollution

We are coming to grips in some measure with stream pollution and with refuse and garbage disposal but our local authority ought to be greater. Our urban laws are strict compared to those that prevail just beyond the corporate limits. Yet, some of the circumferential territory is much more thickly populated than certain areas in the town—and it is the same in half a hundred Tarheel communities—but we are not cloaked with sufficient legal authority to do a needed job there. I daresay, however, that even without extended authority we can find a few unturned stones. Let's get active in this business of stream pollution and waste and garbage disposal.

We have a hybrid job in the field of local public health—that of air pollution, occupational hazards, and accidents. In State health departments and in very large local health departments, there are appropriate bureaus, sections, or units at work in these fields, but such is out of the question in small local units. One can't call accidents, air pollution, and occupational hazards exactly missed opportunities in sanitation, but on the local scene they come close. We must try to match this hybrid job with a "hybrid" man. A crack sanitarian with special knowledge in these fields would be sure to earn the meager pay we'd be sure to grant him.

And thereby hangs the end of my woeful tale. For all those jobs, for this endless array of work, let's keep struggling to get good men—train them, pay them, and work their fingers to the bone. Get that kind of men, give them enlightened supervision, and back them with a good laboratory, and we shall have many fewer missed opportunities.

technical publications

Patients in Mental Institutions, 1950 and 1951

Public Health Service Publication No. 356. 1954. 429 pages. Price $2.00.

This report was compiled from the 25th and 26th annual censuses of patients in mental institutions, the fourth and fifth such censuses to be conducted by the National Institute of Mental Health. It contains data on hospitalized patients with mental diseases and on patients in institutions for mental defectives and epileptics, both public and private.

More complete and greatly expanded over similar previous studies, the report contains 178 statistical tables showing certain characteristics of first admissions, resident patients, discharges, personnel, and expenditures. A bookkeeping account of the flow of patients into and out of mental hospitals and institutions is also given.

Immunization Information For International Travel

Public Health Service Publication No. 384. 1954. 56 pages. 20 cents.

Official information on the immunizations required by each country as well as the immunizations recommended by the Public Health Service as precautionary measures for persons traveling abroad is contained in this pocket-sized book.

Other items include an explanation of the procedure for having vaccinations recorded on the International Certificates of Vaccination form; a list of designated yellow fever vaccination centers; and maps showing the areas of the world in which yellow fever is endemic and the yellow fever receptive areas of the United States.

Travelers may obtain information on subsequent changes in immunzation requirements from the Public Health Service or from State and local health departments and shipping and airline offices.

The Physician in the U. S. Public Health Service

Public Health Service Publication No. 394. Revised 1954. 14 pages. 15 cents.

One of a series of pamphlets devoted to careers in the Public Health Service, this booklet describes opportunities for physicians in clinical medicine, research, epidemiology, administration, quarantine, and foreign service.

Basic information covers requirements for admission to the commissioned corps, duty assignments, rotation, pay scales, and benefits. Detailed information is given about activities in the various Public Health Service hospitals and the research program at the National Institutes of Health. The role of the Public Health Service in cooperating with local health organizations in carrying out public health programs is discussed and examples are given of emergency epidemiological services provided by the Service. Opportunities in overseas health missions are also covered.

Sources of Morbidity Data, Listing Number 2. 1954.

Public Health Service Publication No. 399. 90 pages.

The second listing of projects in the files of the Clearinghouse on Current Morbidity Statistics Projects contains descriptions of 126 projects meeting the clearinghouse criteria, and supplements the 206 projects described in Listing Number 1 (Public Health Service Pub. No. 332).

As in the first listing, the projects are grouped into sections by major type of disease, injury, or impairment, with the following information, if available: (*a*) abstract of the project, (*b*) the organizations participating, (*c*) names and addresses of the principal investigators, (*d*) publication plans and references, and (*e*) the name of a person to contact for further information.

The statistical results of studies are purposely omitted because the clearinghouse is not intended to provide the findings from morbidity studies but rather to show where such data may be found.

Listing Number 2 has a section of supplementary notes on projects in Listing Number 1, which consists of information obtained through unsolicited comments from principal investigators whose projects were listed, or information collected by the clearinghouse staff in the course of other work.

The listings of the clearinghouse are published primarily for the use of actual and potential contributors and for other research workers in the fields of public health and medicine. Persons requesting information from the clearinghouse services are urged to specify the type of study in which they are interested.

This section carries announcements of all new Public Health Service publications and of selected new publications on health topics prepared by other Federal Government agencies.

Publications for which prices are quoted are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington 25, D. C.

The Public Health Service does not supply publications issued by other agencies.

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